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ECONOMIC AND INDUSTRIAL AFFAIRS

No. 1969

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EAST EUROPE REPORT

ECONOMIC AND INDUSTRIAL AFFAIRS

No. 1969

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INTERNATIONAL AFFAIRS

YUGOSLAV-SOVIET SCIENTIFIC-TECHNICAL AGREEMENT, 1977-1978

Belgrade MEDJUNARODNI UGOVORI (supplement to SLUZBENI LIST SFRJ) in Serbo-Croatian No 13, 31 Oct 79 pp 935-986

[Protocol of the Fourth Meeting of the Standing Subcommittee for Scientific-Technical Cooperation of the Joint Yugoslav-Soviet Committee for Economic and Scientific-Technical Cooperation, with annexes, signed in Belgrade 3 November 1977 and ratified 1 June 1978 in Belgrade by the Federal Executive Council and signed by chairman Veselin Djuranovic]

[Excerpts]

Belgrade, 3 November 1977

The following participated in the meeting:

Yugoslav delegation:

Chairman of the delegation:
Zvonimir Knezevic

Members of the delegation:
Bozadar Francic
Ljubisa Zaric
Milisav Borozan
Milomir Pupovic

Experts:
Milutin Stevanovic
Ivica Nuic

Soviet delegation:

Chairman of the delegation:
V. A. Konyushko

Members of the delegation:
I. G. Gverdtsiteli
A. N. Popov
V. F. Terekhov

Experts:
A. I. Lupa
N. N. Abramova

Chairman of the meeting: Zvonimir Knezevic
Secretary of the meeting: Milisav Borozan

The Standing Yugoslav-Soviet Subcommittee for Scientific-Technical Cooperation adopted the following

Agenda of the Fourth Meeting

1. drafting of the long-range program for scientific-technical cooperation within the overall long-range program of economic and scientific-technical cooperation;
2. execution of decisions made at past meetings of the Standing Yugoslav-Soviet Subcommittee for Scientific-Technical Cooperation and the work of the sections of the Subcommittee between meetings;
3. progress and results of scientific-technical cooperation within the sector work group for machinebuilding in light industry and the food industry and in the household appliance industry;
4. results of scientific-technical cooperation between Energoinvest of Sarajevo and the Electric Welding Institute imeni Ye. O. Paton of the USSR Academy of Sciences;
5. organization of cooperation between Yugoslav and Soviet organizations on the basis of the following proposals:
 - i. of the Republic Bureau for Technical Cooperation of the Socialist Republic of Macedonia,
 - ii. of Intereksport of Belgrade;
6. records on the topic plan of scientific-technical cooperation kept by the Standing Subcommittee;
7. proposals of the Soviet side for technical documentation to be received from the economic organizations of the SFRY [Socialist Federal Republic of Yugoslavia] and for Soviet specialists to be received in the SFRY for familiarization with scientific-technical advances and up-to-date manufacturing know-how;
8. proposals of the Yugoslav side for technical documentation to be obtained from USSR ministries and institutions and for Yugoslav specialists to be received in the USSR for familiarization with scientific-technical advances and up-to-date manufacturing know-how;
9. deliberation of the new work plans of scientific-technical cooperation between organizations of the SFRY and the USSR;
10. time and place for holding the Fifth Meeting of the Standing Yugoslav-Soviet Subcommittee for Scientific-Technical Cooperation and the meeting of secretaries and experts of the national sections of the Subcommittee.

RESOLUTIONS

1. Drafting of the long-range program for scientific-technical cooperation within the overall long-range program of economic and scientific-technical cooperation.

Following the guidelines set forth in the Yugoslav-Soviet communique issued on 19 August 1977 concerning the summit meeting, and also the decisions of the 15th Meeting of the Yugoslav-Soviet Committee for Economic and Scientific-Technical Cooperation, the Standing Subcommittee for Scientific-Technical Cooperation hereby adopts the following decisions:

1.1. It is recommended that the sector work groups for economic and scientific-technical cooperation and also the agencies and organizations of the two countries carrying on direct scientific-technical cooperation prepare and in 1978 and 1979 hold consultations on the main directions and topics of long-range scientific-technical cooperation for the period after the year 1980 with a view to establishing relations between that cooperation and economic cooperation and the development of industrial specialization and cooperation.

1.2. The parties shall agree on the measures to be taken so that a uniform methodological approach is achieved in the sector work groups and between organizations and competent agencies carrying on direct cooperation in the drafting of the proposals for the long-range program of scientific-technical cooperation. Also, with respect to resolution of complicated intersector problems, they should mutually adjust the dates of their respective preparations and the topic plan of long-range cooperation.

1.3. The Joint Committee is requested to prevail upon planning and other competent agencies of the two countries to begin to draft the program of future cooperation in a comprehensive way, taking into account the prospects for scientific-technical cooperation and the need that it be linked to the prospects for economic cooperation, and, when the program of scientific-technical cooperation is drafted, to send it to the Subcommittee.

1.4. It is recommended that planning and other agencies of the two countries, when the sector work groups complete their job, compile a summary prospective plan of scientific-technical cooperation and actively promote its implementation.

1.5. It is worthwhile to look into the possibility of coordinating basic long-range directions of cooperation between academies of science and in the field of higher education, and proposals on this topic are to be exchanged before 1 May 1978.

1.6. Particular attention should be paid to the development of complex forms of cooperation and to taking advantage of the opportunities to exist for establishing cooperation in those areas where it has not been established as yet.

Among other things, taking into account the great importance of scientific-technical information, the parties shall deliberate development of cooperation in this field. The Soviet side proposed at this meeting that such cooperation be established and that relevant agreements be concluded between the competent bodies of the SFRY and the USSR. It will submit specific proposals of a program of cooperation by the end of the year 1977. The Yugoslav side will communicate its opinion of those proposals by the month of May 1978.

Taking the position that relations between individual republics of the respective countries represent a large opportunity for broader and deeper scientific-technical cooperation, the parties shall take steps so that they develop still more.

1.7. Taking into account the larger scope of the economic and scientific-technical cooperation between the SFRY and the USSR, the Subcommittee requests that the Joint Committee deliberate organizing a "day" of the science and technology of one country in the other during 1979 and 1980.

2. Execution of decisions made at past meetings of the Standing Yugoslav-Soviet Subcommittee for Scientific-Technical Cooperation and the work of the sections of the Subcommittee between meetings.

Communication by the sections of the Subcommittee on fulfillment of obligations assumed at past meetings of the Subcommittee is hereby acknowledged, and they are relieved of fulfillment or new dates are set for fulfillment of obligations, in accordance with Appendix No 5.

The sides stipulated that in future obligations they assume in connection with receiving specialists for familiarization with scientific and technical advances and for study of advance production know-how shall lapse when 1 year has passed since the date of confirmation of the possibility and specific dates for meeting the request from the country which is to receive the specialists.

It is hereby acknowledged that between meetings of the Subcommittee meetings of the secretaries and experts of the sections of the Subcommittee discussed the situation concerning fulfillment of mutual obligations assumed at the Third Meeting of the Subcommittee and the recommendations of the Subcommittee. Among other things, agreement was reached on the text of the draft of the Recordkeeping Procedure on Scientific Research Topics Conducted by the Subcommittee and Development Projects in Organizations of the SFRY and the USSR, and there was discussion of the progress and results of scientific-technical cooperation on a contract basis implemented through the All-Union Association Vneshtekhnika, the status of preparation of new work plans of scientific-technical cooperation of organizations of the SFRY and the USSR, and the status of the work of drafting proposals for purchase of technical documentation and for mutual familiarization of the specialists with up-to-date manufacturing know-how and scientific and technical advances.

Specific measures toward speeding up fulfillment of enlarged obligations and the development and extension of cooperation were coordinated in the meetings.

3. Progress and results of scientific-technical cooperation within the sector work group for machinebuilding in light industry and the food industry and in the household appliance industry.

It is hereby acknowledged that scientific-technical [sentence garbled-- translator's note] Buducnost of Bela Palanka, and in machinebuilding for light industry and the food industry and in the household appliance industry has been conducted since 1972 within that sector work group.

On the Yugoslav side the most active participants in that cooperation have been the Kostroj enterprise for machinebuilding in light industry of Slovenske Konjice and Buducnost of Bela Palanka, and in machinebuilding for the food industry the enterprise Jedinstvo of Zagreb and Minel of Belgrade, and on the Soviet side the leading sector institutes of the Ministry of Machinebuilding for Light and Food Industry and Household Appliances, the All-Union Scientific-Research Institute of Light and Textile Machinebuilding and the All-Union Scientific-Research and Experimental Design Institute of Food Machinebuilding.

In the past cooperation between them has been conducted most frequently as an exchange of specialists for familiarization with scientific and technical advances and up-to-date manufacturing know-how, exchange of scientific-technical documentation and samples, and also work on selected topics on the basis of joint work plans. The specific list of topics and scope of cooperation are coordinated every year in the protocols of the sector work group.

Joint work is now being done by Kostroj of Slovenske Konjice and the Orlovskiy Scientific Research Institute of Light Machinebuilding (NII-legmash) and the All-Union Scientific Research Institute for Textile Machinery (VNIIL-tekhmash) on the topic "Research and Development of Methods of Dyeing Leather in an Electrostatic Field," whose purpose is to create machines for continuous dyeing of leather, the development project to end this year with mutual agreement on the engineering design of the unit. Jedinstvo and the All-Union Scientific Research and Experimental Design Institute for Agricultural Machinebuilding (VNIIEKI-prodmash) are working jointly on the topic "Creation of New Designs for Milk Sterilization," which is to culminate in 1978 with the production and testing of a full-scale experimental prototype of an automatic device with program control and also on the topic "Creation of High-Output Spray Dryers for Production of Dried Dairy Products."

The shortcomings of cooperation in this field are the extension of deadlines for the development project envisaged in work plans, the lack of the final reports of the organizations which are cooperating, and the lack of coordination concerning topics of cooperation in the field of electrical household appliances.

In this connection the Standing Subcommittee for Scientific-Technical Cooperation recommends to the sector work group that it caution the organizations engaged in cooperation concerning the need to compile reports on the completed development and concerning the need to employ the most effective forms of cooperation so that the group is systematically informed about the progress of cooperation of those organizations and may take steps toward timely fulfillment of mutual obligations; it is also recommended to the work group that it prepare and exchange proposals on cooperation in the field of household electrical appliances and coordinate the topic plan on cooperation in this field at the work group's next meeting.

4. Results of scientific-technical cooperation between Energoinvest of Sarajevo and the Electric Welding Institute imeni Ye. O. Paton of the USSR Academy of Sciences.

4.1. It is hereby acknowledged that scientific-technical cooperation between Energoinvest of Sarajevo and the Electric Welding Institute imeni Ye. O. Paton of the USSR Academy of Sciences, Kiev, was conducted between 1972 and 1977 on the following topics:

i. "Influence of Residual Voltages on the Load-Bearing Strength of Welded Joints and Fabrications,"

ii. "Interrelated Scientific Research and Production Engineering Projects To Develop the Design and Production of Economical Aluminum-Alloy Long-Distance Transmission Line Towers,"

iii. "Study of the Processes of Thermal Deformation During Welding."

Cooperation on these topics is proceeding in conformity with the coordinated work plans. Part of the development work has been done on a contract basis. The sides are satisfied with the results of cooperation.

4.2. Since agreement in principle has been reached as a result of negotiations between Energoinvest and the High Temperature Institute of the USSR Academy of Sciences concerning their cooperation in work to develop MHD [magneto-gas dynamic or magneto-hydrodynamic] generators for liquid, gas and solid fuels, it is recommended that these organizations reach mutual agreement on their work plan and form of cooperation as speedily as possible, and Energoinvest is requested to receive a group of Soviet specialists in January and February 1978.

5. Organization of cooperation between Yugoslav and Soviet organizations on the basis of the following proposals:

i. of the Republic Bureau for Technical Cooperation of the Socialist Republic of Macedonia,

ii. of Intereksport of Belgrade.

5.1. Between the meetings the sides agreed on a specific topic plan and forms of scientific-technical cooperation on the basis of the proposal of organizations of the Socialist Republic of Macedonia.

Organizations of the Socialist Republic of Macedonia recently delivered to the Soviet side the draft of a work plan for cooperation on one topic--in the field of rice growing. On two other topics, cooperation and selection and general protection of tobacco, the draft of joint work plans will be delivered in November of this year. The draft of joint work plans in viticulture, wine production and sheep raising will be delivered to the Soviet side subsequently.

The Subcommittee recommends to interested organizations that they coordinate joint work plans as soon as possible concerning the topic selected for cooperation and submit them to the Subcommittee.

5.2. Mutual interest of organizations of the two countries in cooperation on 32 topics has been expressed as a result of study of the proposals for scientific-technical cooperation obtained from Intereksport of Belgrade.

The Subcommittee recommends to the interested organizations that before 1 May 1978 they conduct consultations of specialists related to the list of agreed topics so as to specify more precisely the form of cooperation and mutual obligations.

6. Records on the topic plan of scientific-technical cooperation kept by the Standing Subcommittee.

The Recordkeeping Procedure on Scientific Research Topics Conducted by the Subcommittee and Development Projects in Organizations of the SFRY and the USSR, which has been submitted by the secretaries of the sections of the Subcommittee, is hereby adopted in conformity with Appendix No 20.

The sector work group, competent agencies carrying on direct scientific-technical cooperation, and organizations engaged in cooperation should be made familiar with this "Procedure," and that document should take effect as of 1 January 1978.

7. Proposals of the Soviet side for technical documentation to be received from the economic organizations of the SFRY [Socialist Federal Republic of Yugoslavia] and for Soviet specialists to be received in the SFRY for familiarization with scientific-technical advances and up-to-date manufacturing know-how.

In the framework of cooperation being carried on through the Standing Subcommittee for Scientific-Technical Cooperation economic organizations of the SFRY are to:

i. deliver to Soviet organizations technical documentation on three topics, in accordance with Appendix 3,

ii. receive 33 Soviet specialists and familiarize them with up-to-date manufacturing know-how and scientific-technical advances related to 12 topics, in accordance with Appendix 4.

8. Proposals of the Yugoslav side for technical documentation to be obtained from USSR ministries and institutions and for Yugoslav specialists to be received in the USSR for familiarization with scientific-technical advances and up-to-date manufacturing know-how.

In the framework of cooperation being conducted through the Standing Subcommittee for Scientific-Technical Cooperation USSR ministries and institutions are to:

i. deliver to Yugoslav organizations technical documentation on five topics, in accordance with Appendix 1,

ii. receive 151 Yugoslav specialists and familiarize them with up-to-date manufacturing know-how and scientific-technical advances related to 84 topics, in accordance with Appendix 2.

9. Deliberation of the new work plans of scientific-technical cooperation between organizations of the SFRY and the USSR.

Joint work plans of scientific-technical cooperation between SFRY and USSR organizations are approved in conformity with Appendices 6 through 19.

It is worth suggesting to organizations engaged in cooperation that they agree on a joint report concerning completion of projects for delivery to the Subcommittee and study the possibility of cooperation in the use of the results obtained.

10. Time and place for holding the Fifth Meeting of the Standing Yugoslav-Soviet Subcommittee for Scientific-Technical Cooperation and the meeting of secretaries and experts of the national sections of the Subcommittee.

The sides have agreed that the fifth regular meeting be held in Moscow in the third or fourth quarter of 1978, the time and place of the meeting of secretaries and experts to be agreed upon between meetings.

This protocol was signed in Belgrade 3 November 1977 in two identical copies, each of them in the Serbo-Croatian and Russian languages, both texts to have equal authority.

This protocol shall take effect on the day it is ratified by the competent agencies of the two countries, concerning which the chairman of the sections

of the Subcommittee shall notify one another, and it shall be applied temporarily from the date of signing.

Chairman of the Yugoslav section
of the Standing Subcommittee,
Zvonimir Knezevic (signed)

Chairman of the Soviet section
of the Standing Subcommittee,
V. Konyushko (signed)

Appendix No 1 to the Protocol of the Fourth Meeting of the Standing Yugoslav-Soviet Subcommittee for Scientific-Technical Cooperation

List of Technical Documentation Which Soviet Organizations Are To Deliver to Yugoslav Economic Organizations in 1977 and 1978

- 41-01 Technical Documentation for Construction of Underwater Pipelines
4/D/III
- 41-02 Technical Documentation for Construction of Metal Containers
5/D/III
- 41-03 Technical Report on Systems for Protecting Diesel-Electric Locomotives From Skidding
B/B
- 41-04 Instructions for Checking, Correcting and Shaping Locomotive Wheels
B/B
- 41-05 Technical Report on Technology for Processing Reinforcing Steel Rods
B/B

Appendix No 2 to the Protocol of the Fourth Meeting of the Standing Yugoslav-Soviet Subcommittee for Scientific-Technical Cooperation

List of Topics on Which Soviet Organizations Will Receive Yugoslav Specialists in 1977 and 1978 and Familiarize Them With Manufacturing Know-How and Scientific-Technical Advances

- 42-01 Familiarization With the Production of Asbestos- and Graphite-Base Metal-Free Gasket Materials for Fittings
52/III Two specialists for 8 days
- 42-02 Familiarization With Dynamic Simulation of Electric Power Systems on Computers
162/III Five specialists for 20 days
- 42-03 Familiarization With the Refining of Petroleum by Catalytic Cracking
164/III Two specialists for 8 days

42-04 169/III	Familiarization With Physical and Chemical Methods of Analyzing Crude Petroleum and Fractions Two specialists for 8 days
42-05 170/III	Familiarization With the Production of Sulfur Two specialists for 15 days
42-06 173/III	Familiarization With the Methodology of Studying Petroleum and Gas Deposits Two specialists for 20 days
42-07 174/III	Familiarization With the Methodology of Developing Petroleum and Gas Deposits in Carbonate Rocks Two specialists for 30 days
42-08 179/III	Familiarization With the Technology and Organization of Construc- tion of Compressor Stations Two specialists for 14 days
42-09 1/IV	Familiarization With the Design of Open Pits and Underground Mines for Nickel, Cobalt and Aluminum One specialist for 15 days
42-10 3/IV	Familiarization With the Application of Computers in Identifying the Spectrum of Chemical Composition One specialist for 14 days
42-11 5/IV	Familiarization With Methods of Geological Prospecting of Copper Deposits Two specialists for 15 days
42-12 7/IV	Familiarization With Scientific Research Work in the Hydrolysis of Vegetable Waste Two specialists for 8 days
42-13 8/IV	Familiarization With the Drying of Sunflower Seeds Two specialists for 10 days
42-14 12/IV	Familiarization With Work on the Topic "Investments" One specialist for 30 days
42-15 20/IV	Familiarization With the Raising of Medicinal and Aromatic Herbs and Their Application in Medicine and Pharmacy Two specialists for 15 days
42-16 24/IV 26/IV 29/IV	Familiarization With the Production of Insulators Five specialists for 8 days

42-17 28/IV	Familiarization With the Procedure for Preparation of Electric Porcelain Mix One specialist for 8 days
42-18 No number	Familiarization With the Application of Toxic Chemicals Done by Chromos-Katran-Kutrillin of Zagreb One specialist for 10 days
42-19 9/IV	Familiarization With the Technology for Production of Secondary Aluminum Alloys Four specialists for 8 days
42-20 14/IV	Familiarization With the Drying and Storage of Kernel Crops One specialist for 20 days
42-21 21/IV	Familiarization With Research on Creation of Accretion and Dissipation in Celestial Bodies One specialist for 25 days
42-22 15/IV	Familiarization With Determination of the Criteria of Dynamic Stability of Trucks One specialist for 8 days
42-23 16/IV	Familiarization With the Mathematical Processing of Results of Measurements in the Testing of Designs in Machinebuilding Two specialists for 8 days
42-24 18/IV	Familiarization With a Method of Testing Brakes in Operation and in an Experimental Station Two specialists for 8 days
42-25 163/III	Familiarization With Work in Selecting Apricots One specialist for 15 days
42-26 13/IV	Familiarization With the Organization of Work of the Scientific Research Institute of Vegetable Growing, Viticulture and Wine-making One specialist for 8 days
42-27 19/IV	Familiarization With the System of Soil and Crop Practices in Viticulture One specialist for 15 days
42-28 22/IV	Familiarization With Various Methods of Inspecting Cement Two specialists for 12 days
42-29 30/IV	Familiarization With the Organization of Work in Sea Ports Two specialists for 10 days

42-30 Production of Aluminum Foil
33/IV Production of Lacquered Strip for Manufacture of Containers From
 Aluminum and Aluminum Alloys for the Canning Industry
 Two specialists for 8 days

42-31 Familiarization With Humus and Plant Growth
35/IV One specialist for 3 days

42-32 Familiarization With Research Related to the Topic "Role of USSR
41/IV Trade Unions in Building Socialism and Communism"
 One specialist for 20 days

42-33 Familiarization With Research Related to the Topic "Changes in
43/IV Present-Day West European Left"
 Two specialists for 10 days

42-34 Familiarization With the Use of Mechanization in Field Cropping
44/IV and Market Gardening
 Two specialists for 10 days

42-35 Familiarization With Methods of Treating Diseases of the Periph-
45/IV eral Vascular System
 One specialist for 60 days

42-36 Familiarization With the Technology of Perforation Work and Meth-
47/IV ods of Measurement in Petroleum and Gas Wells
 Two specialists for 14 days

42-37 Familiarization With the Technology of Logging in Pipeless Petro-
49/IV leum and Gas Wells
 Two specialists for 15 days

42-38 Familiarization With the Study of Synthetic Sorbents
56/IV One specialist for 5 days

42-39 Familiarization With Aspects of Using Explosive Mixtures in Open-
58/IV Pit Mines
 One specialist for 8 days

42-40 Familiarization With Methods of Analysis in the Technology of
58/IV Mixing Rubber Mixtures
 One specialist for 5 days

42-41 Familiarization With Partial Replacement of Gelatin in Photo-
61/IV graphic Emulsions
 One specialist for 6 days

42-42 63/IV	Familiarization With the Production of Carboxymethyl Cellulose Three specialists for 3 days
42-43 64/IV	Familiarization With the Design of Railroad Cars One specialist for 5 days
42-44 64/IV	Familiarization With Methods of Studying the Viral Pathogen of the Disease Crimean Hemorrhagic Fever One specialist for 30 days
42-45 66/IV	Familiarization With Research Related to the Topic "Computation of Time--Results of the Most Recent Research and Methodological Pro- cedures" One specialist for 10 days
42-46 67/IV	Familiarization With the Theory of Mathematical Programming One specialist for 30 days
42-47 68/IV	Familiarization With Research Related to the Topic "Views of Marx and Engels Concerning Anarchism" One specialist for 9 days
42-48 69/IV	Familiarization With Methods of Studying Quality When Soil Is Ir- rigated With Artificial Rain One specialist for 9 days
42-49 70/IV	Familiarization With Research Related to the Topic "Relation Be- tween the Policy of Nonalignment and Socialism" One specialist for 5 days
42-50 74/IV	Familiarization With the Study of the Root System of Field Crops Two specialists for 15 days
42-51 76/IV	Familiarization With Procedure for Drying Agricultural Products One specialist for 20 days
42-52 90/IV	Familiarization With Electric Welding Three specialists for 2 days
42-53 91/IV	Familiarization With the Production of Pigments for the Drug In- dustry Three specialists for 6 days
42-54 181/III	Familiarization With the Flow Pattern of Dissociated Gas in the Boundary Layer One specialist for 30 days
42-55 42/IV	Dynamics of Truck Cranes One specialist for 30 days

- 42-56 Projection and Technology for Preparation of Collection of Petro-
48/IV leum and Casinghead Gas
Two specialists for 10 days
- 42-57 Measuring and Regulating Equipment in Preparation and Transport of
50/IV Petroleum and Gas
Three specialists for 10 days
- 42-58 Preparation of Foams in the Latter Phase of Developing Gas Depos-
51/IV its and Deposits of Gas Condensate
Two specialists for 7 days
- 42-59 Familiarization With the Water Supply System of Large Cities With
72/IV a Population Exceeding 1 Million
Five specialists for 10 days
- 42-60 Familiarization With the Use of Electrochemical Cathode Protection
73/IV on Water Supply Structures
Four specialists for 8 days
- 42-61 Study of the Behavior of the Mineral Portion of a Solid Fuel Dur-
75/IV ing Combustion
One specialist for 30 days
- 42-62 Development of a Method of Protecting and Improving Stocks of Ani-
77/IV mals, Including Rare Species
One specialist for 15 days
- 42-63 Familiarization With Physical Processes in Dense Plasma
79/IV One specialist for 15 days
- 42-64 Familiarization With Methods of Studying the Quality of Meat and
89/IV Meat Products
One specialist for 15 days
- 42-65 Familiarization With the Production of Air-Filled Chocolate (hol-
99/IV low chocolate)
Two specialists for 8 days
- 42-66 Familiarization With Measuring Methods and Available Equipment in
115/IV Deep Wells
Two specialists for 15 days
- 42-67 Familiarization With Dehydration of Petroleum at Low Temperatures
116/IV Two specialists for 15 days

- 42-69
119/IV Familiarization With an Interpretation of Paleohydrogeological
Charts and Maps of Sediments of Mesozoic Age Related to the Fore-
casting of Petroleum and Gas Deposits
One specialist for 10 days
- 42-69
121/IV Familiarization With Using the Pattern of Formation of Petroleum
Deposits and With Directions in Programming Research Work
Two specialists for 14 days
- 42-70
123/IV Familiarization With Advances in the Production of Measuring
Equipment in Producing Wells
Two specialists for 15 days
- 42-71
124/IV Familiarization With Gas Turbines Which Can Be Used for Operation
of Equipment in Petroleum-Gas Fields
Two specialists for 15 days
- 42-72
125/IV Familiarization With Selection of Electrical Devices Protected
Against Explosion for Work in Extracting and Shipping Petroleum
and Gas
Two specialists for 15 days
- 42-73
126/IV Familiarization With the Construction of Directional Horizontal,
So-Called "Branch-Like" Wells
One specialist for 20 days
- 42-74
127/IV Use of Electric Motors To Combat Crookedness of the Bore Hole
One specialist for 20 days
- 42-75
130/IV Familiarization With Coordination of the Work of Participants in
Carrying Out Planned Assignments in an Enterprise for Production
of Petroleum and Gas
Two specialists for 20 days
- 42-76
131/IV Familiarization With the Processing of Stratum and Waste Water
Two specialists for 14 days
- 42-77
133/IV Familiarization With the Use of Petrography and Statistics in
Studying the Collector Characteristics of Carbonate Rocks
One specialist for 8 days
- 42-78
134/IV Familiarization With the Methodology of Developing Stratigraphic
Petroleum and Gas deposits
Two specialists for 8 days
- 42-79
135-IV Familiarization With the Influence of Geological Indicators in
Computing the Volume Coefficient When Deposits Are Put Into Pro-
duction
Two specialists for 20 days

- 42-80 . Familiarization With the Use of Self-Protecting Electric Circuits
136/IV in Gas and Petroleum Machinery
Two specialists for 15 days
- 42-81 Study of the Electric Motor Propulsion of a Thyristor Locomotive
105/IV Three specialists for 8 days
- 42-82 Familiarization With the Power Supply of Auxiliary Equipment in
100/IV Thermal Electric Power Plants
One specialist for 5 days
- 42-83 Familiarization With the Training of Young People and Adults in
141/IV the Educational System
One specialist for 10 days
- 42-84 Familiarization With the Organization of Work of an Institution
93/IV for Management and Technical Supervision and Functional Education
of Supervisory Personnel
Five specialists for 4-5 days

Appendix No 3 to the Protocol of the Fourth Meeting of the Standing Yugo-
slav-Soviet Subcommittee for Scientific-Technical Cooperation

List of Technical Documentation Which Yugoslav Work Organizations Will De-
liver to Soviet Organizations in 1977 and 1978

- 43-01 Technical Reports on Use of Fixed Productive Capital in Rail
BB Transportation
- 43-02 Technical Documentation on Improvement of Regulators of Auxiliary
BB Devices for the Motors of Diesel Locomotives
- 43-01 Documentation and Material Entitled "Final Report on the Jadran
1/D/IV III Project"

Appendix No 4 to the Protocol of the Fourth Meeting of the Standing Yugo-
slav-Soviet Subcommittee for Scientific-Technical Cooperation

List of Topics on Which Yugoslav Organizations Will Receive Soviet Special-
ists in 1977 and 1978 and Familiarize Them With Manufacturing Know-How and
Scientific-Technical Advances

- 44-01 Familiarization With the Organization of Work of Publishers and
S23/III Printers
Three specialists for 7 days

44-02 No number	Familiarization With the Cultivation of Medicinal and Aromatic Herbs and Their Use in Medicine and Pharmacy Two specialists for 15 days
44-03 S2/IV	Familiarization With Know-How in the Use of Foothills for Con- struction of Residential and Public Buildings Two specialists for 10 days
44-04 S3/IV	Familiarization With the Technology of Manufacturing Marine Diesel Engines Three specialists for 8 days
44-05 S4/IV	Familiarization With the Geological-Structural Peculiarities of Deposits of Copper-Silicon Ores Three specialists for 12 days
44-06 S5/IV	Familiarization With Experience in Organizing Fuel Storage of Thermal Electric Power Plants Two specialists for 10 days
44-07 S7/IV	Familiarization With the Organization and Technology of Ship Re- pairs Four specialists for 7 days
44-08 S8/IV	Participation in the International Fashion Festival on Hvar Six specialists for 8 days
44-09 S10/IV	Familiarization With Development of Equipment for Channel Switch- ing in News Transmission Two specialists for 8 days
44-10 11/IV	Familiarization With the Production of Fashionable Footwear One specialist for 10 days
44-11 12/IV	Familiarization With the Engineering and Technology of Cementing Deep Wells Two specialists for 10 days
44-12 13/IV	Familiarization With the Equipment and Organization of Trade on the Self-Service Principle Three specialists for 8 days

Appendix No 6 to the Protocol of the Fourth Meeting of the Standing Yugoslav-Soviet Subcommittee
for Scientific-Technical Cooperation

Work Program of Scientific-Technical Cooperation Between the Jaroslav Cerni Water Management Institute (SFRY, Belgrade) and the All-Union Scientific Research Hydraulic Engineering Institute imeni B. Ye. Vedeneyev (VNIIG) of the Ministry of Power and Electrification (USSR, Leningrad) on the Topic: Development of a Method of "Alluvium Consolidation Related to Construction of Water Retention Structures"

Project Phase	Title of Topic, Stage of Work, Purpose of Work	Participants		Date of Completion of Work (year, quarter)	Form of Finished Work	Organizational Measures and Conditions for Delivery of Results of Work
		USSR	SFRY			
1	2	3	4	5	6	7
	46-01 "Alluvium Consolidation Related to Construction of Water Retention Structures"	VNIIG	J. Cerni	77 and 78	"Methodological Recommendations for Alluvium Consolidation Related to Construction of Water Retention Structures"	
	Introduction of more advanced methods of alluvium consolidation related to construction of water retention structures					
1	Both sides prepare project designs. Joint compilation of the work program for injection and trench compaction and consolidation	VNIIG	J. Cerni	Jan 77	Draft of the program	Exchange of the program

1	2	3	4	5	6	7
2	Each side prepares recommendations, analyzing examples from its own and foreign construction industry	VNIIG	J. Cerni	Mar 78	Brief technical presentations	Exchange of presentations
2.1	Study of the status of the problem on the basis of the experience of the two sides and other available materials	VNIIG	J. Cerni	Feb 77	Review of material on the problem studied	10-day visit of 3 Soviet specialists to the SFRY
	Participation in the Fourth Yugoslav Symposium on Rock Mechanics and Underground Work in Zvecevo					
2.2	Study of preliminary material related to Point 2 prepared by the respective sides, discussion and coordination of the material	VNIIG	J. Cerni	Sep 77	Scientific-technical reviews	10-day visit of 3 Yugoslav specialists to the USSR
2.3	Preparation of a draft of methodological recommendations for alluvium injection	VNIIG	J. Cerni	Jul 78	First editing of the "recommendations"	Exchange of material
2.4	Preparation of a draft of methodological recommendations for trench compaction	VNIIG	J. Cerni	Mar 78	First editing of the "recommendations"	10-day visit of 3 Soviet specialists to the SFRY

1	2	3	4	5	6	7
2.5	Discussion of the material related to Points 2.3 and 2.4 and mutual agreement	VNIIG	J. Cerni	Sep 78	Second editing of the "recommendations"	10-day visit of 3 Yugoslav specialists to the USSR
Participation in the Ninth All-Union Conference on Soil Consolidation in Tashkent						
3	Preparation and publication of the recommendations in Russian and Serbo-Croatian	VNIIG	J. Cerni	Dec 78	Publication of the "recommendations"	Exchange of the "recommendations"

Remarks: 1. The mutual exchange of scientific research documentation and information material is to be gratis.
 2. The agreed equivalent for the travel of the specialists on an equivalent basis not involving foreign exchange is 60 person-days.

Appendix No 7 to the Protocol of the Fourth Meeting of the Standing Yugoslav-Soviet Subcommittee for Scientific-Technical Cooperation

Work Plan of Scientific-Technical Cooperation Between the Institute Informenergo of the USSR Ministry of Power and Electrification and the Institute Energoprojekt (SFRY) on the Topic: Development of a Joint Computerized Scientific-Technical Information System in the Electric Power Industry

No	Title of Topic, Stage of Work	Organization Participating in Project		Date of Completion	Form of Finished Work	Organizational Measures and Terms of Exchange of Results of Work
		In USSR	In SFRY			
1	2	3	4	5	6	7
	47-01 Development of a Joint Computerized Scientific-Technical Information System in the Electric Power Industry	Inform-energo	Energoprojekt	1977	Satisfaction of the requirements of information users in the industry	Mutual sending of two specialists of Informenergo and Energoprojekt for 7 days
1	Organization of mutual information service in the framework of the "request-response" system and selective issuance of reports	Inform-energo	Energoprojekt	3d quarter		
2	Development of principles concerning joint use of the computerized scientific-technical information systems of the national industries				View concerning joint use of the computerized scientific-technical information systems of the national industries	

1	2	3	4	5	6	7
3	Conduct of joint experimental work in mutual reference-information service on the basis of traditional and computerized systems	Inform- energo	Energo- projekt	2d-4th quarters	Recommendations on mutual operation of the systems and exchange of related information on pre-machine and machine carriers	
4	Development of unified principles of creating an information retrieval language for the computerized systems	Inform- energo	Energo- projekt	2d quarter	Method to be used in developing a unified information retrieval language for computerized systems	
5	Mutual exchange of materials in the field of scientific-technical information: Information publications Foreign sources Material on practical experience				Use of the partner's material for one's own work in the industry	

Appendix No 8 to the Protocol of the Fourth Meeting of the Standing Yugoslav-Soviet Subcommittee for Scientific-Technical Cooperation

Work Plan of Scientific-Technical Cooperation of the Tallin Polytechnic Institute of the USSR
Ministry of Higher and Specialized Education and the Boris Kidric Institute for Nuclear Science
(Belgrade) on the Topic: Study of the Behavior of the Mineral Portion of Solid Fuels During Com-
bustion

No	Title	Participant		Dates of Commence- ment and Completion of Work	Form of Fin- ished Work	Organizational Meas- ures and Conditions for Delivery of Re- sults of Work
		In USSR	In SFRY			
1	2	3	4	5	6	7
1	48-01 Study of the Behavior of the Mineral Portion of Solid Fuels During Combustion and Preparation of Rec- ommendations for the Design and Use of Heating Surfaces of Boilers When Solid Fuels With a Complicated Compo- sition of the Min- eral Portion Are Burned	Tallin Poly- tech- nic Insti- tute (TPI)	Boris Kidric Insti- tute for Nu- clear Sci- ence (IBK)	1977-1980	Scientific-technical report, along with recommendations on the design and use of heating surfaces of boilers during combustion of solid fuels with a com- plicated composi- tion of the mineral portion	
1.1	Preparation of sur- veys of existing scientific advances and practical use of solid fuels with complicated	TPI		2d quarter 1977	Conclusion concern- ing the status of the problem of us- ing solid fuels with a complicated composition of the	

<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>
	composition of the mineral portion in the USSR power industry				mineral portion in the USSR power industry	
1.2	Preparation of surveys of existing scientific advances and practical use of solid fuels with complicated composition of the mineral portion in the Yugoslav power industry	IBK	2d quarter 1977		Conclusion concerning the status of the problem of using solid fuels with a complicated composition of the mineral portion in the Yugoslav power industry	Visit of 2 Yugoslav specialists to the USSR for 10 days to participate in a seminar on the use of solid fuels in the power industry and to plan the research
1.3	Experiments to study the physicochemical characteristics of fuel dust and the ash of the fuel with complicated composition of the mineral portion	TPI	4th quarter 1977		Conclusion concerning the physicochemical characteristics of fuel dust and the ash of certain fuels of the USSR and the SFRY	Visit of 1 Yugoslav specialist to the USSR for 35 days, participation in experiments
1.4	Experiments to study the conditions of the influence which soiling of the heating surfaces of boilers with ash deposits has on heat exchange	IBK	4th quarter 1977		Conclusion concerning the influence of ash deposits on the conditions of heat exchange in boilers	Visit of 1 Soviet specialist to the SFRY for 35 days to participate in experiments

1	2	3	4	5	6	7
1.5	Study of the results achieved and mutual reconciliation of technical assignments related to building and experimental installations for studying the mineral portion of fuel during combustion	TPI	IBK	4th quarter 1977	Joint conclusion concerning the principles of building a general-purpose experimental installation and coordinating the technical assignment of designing the installation	Visit of 2 Soviet specialists to the SFRY for 10 days to reach mutual agreement on the technical assignment for designing the experimental installation
1.6	Design of the experimental installation	TPI		4th quarter 1978	Engineering design of the installation	Visit of 2 Yugoslav specialists to the USSR for 7 days to prepare the design of the experimental installation
1.7	Designing the experimental sounds for studying the behavior of the mineral portion of the fuel during combustion and relating them to the engineering design of the experimental installation		IBK	4th quarter 1978	Engineering design of the sound	Visit of 2 Soviet specialists to the SFRY for 7 days to connect the sounds to the experimental installation
1.8	Construction of the experimental installation for studying the	TPI		4th quarter 1979	Experimental installations	Visit of 2 Soviet specialists to the SFRY for 7 days to participate in

<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>
	behavior of the mineral portion of the fuel during combustion					calibrating the sounds
1.9	Manufacture of the experimental sounds for studying the mineral portion of the fuel during combustion	IBK		4th quarter 1979	Experimental sounds	Delivery of the experimental sounds by the Yugoslav side to the USSR and visit of 2 Yugoslav specialists to the USSR for 7 days in order to adjust the installation
1.10	Preliminary tests and determination of the actual indicators of the experimental installation	TPI		1st quarter 1980	Conclusion concerning the indicators of the experimental installation	Delivery of 5 kg of fuel by the Yugoslav side for testing
1.11	Experiments to investigate the behavior of the mineral portion of the fuel during combustion	TPI	IBK	2d quarter 1980	Report on results of the tests	Visit of 1 Yugoslav specialist to the USSR for 30 days to participate in the experiments, Soviet side gives samples of the ash to the SFRY
1.12	Physicochemical analyses of a sample of the deposits	TPI		3d quarter 1980	Report on results of physicochemical characteristics of deposits	Delivery of the report on the physicochemical analysis

1

2

3

4

5

6

7

of the sample of
the deposit by the
Soviet side to the
SFRY

1.13 Physicochemical
analyses of a sam-
ple of the ash

IBK

3d quarter
1980

Report on results of
physicochemical
characteristics

Delivery of report
of the Yugoslav
side to the USSR

1.14 Preparation of the
final report on the
project and draft-
ing of recommenda-
tions for the de-
sign and use of
heating surfaces

TPI

4th quar-
ter 1980

Scientific and tech-
nological report
and recommendations
for the design and
use of heating sur-
faces of boilers
related to the com-
bustion of solid
fuels with a com-
plex composition of
the mineral portion

Visit of 3 Soviet
specialists to the
SFRY for 10 days to
reach agreement on
the scientific-
technical report
and recommendations
for use of the re-
sults of coopera-
tion in the economy

Remarks:

1. The results obtained in the USSR and in the SFRY are to be published jointly.
2. The equivalent for the visits of the specialists on the basis of equivalent exchange not involving foreign exchange is 113 person-days.
3. Technical documentation and samples are to be delivered gratis in both directions.

Appendix No 9 to the Protocol of the Fourth Meeting of the Standing Yugoslav-Soviet Subcommittee
for Scientific-Technical Cooperation

Work Plan of Scientific-Technical Cooperation Between the Scientific Research Institute of the Construction Industry of USSR Gosstroy and the Yugoslav Construction Center on the Topic: Development of a Progressive Technology and Organization of a Reliable System of "Chain" Construction of Multistory Apartment and Public Buildings

No <u>1</u>	Title of Topic and Stages of Work <u>2</u>	Participating Organizations		Date of Completion of Work (year, quarter) <u>5</u>	Form of Results <u>6</u>	Organizational Measures. Conditions for Delivery of Results (paid-gratis) <u>7</u>
		In USSR <u>3</u>	In SFRY <u>4</u>			
	49-01 Development of a Progressive Technology and Organization of a Reliable System of "Chain" Construction of Multistory Apartment and Public Buildings	NIISP, USSR Gosstroy	JGC	1977-1980	1. Progressive methods of organization and technology of multistory apartment and public building construction 2. Report on the topic and recommendations	
	Purpose of the project: reduction of construction time, reduction of construction cost, and higher labor productivity					
Stage 1	Improvement of technology and organization of "chain" (successive) construction of the	NIISP		2d quarter 1977-4th quarter 1978	Scientific-technical report on improvement of technology and organization of	Delivery of report to the Yugoslav side (gratis)

1	2	3	4	5	6	7
	below-ground portion of buildings				"chain" construction of the below-ground portion of buildings	
1.1	Drafting of methodological recommendations for designing the technology and organization of "chain" construction of the below-ground portion of buildings by means of specialized units	NIISP		1st-3d quarters 1977	Methodological recommendations for designing the technology and organization of "chain" construction of the below-ground portion of buildings by specialized units	Visit of 1 Yugoslav specialist to the USSR for 12 days in the 3d quarter of 1977 on the basis of equivalent exchange not involving foreign exchange. Delivery of methodological recommendations to the Yugoslav side (gratis)
1.2	Drafting of mandatory technological rules for construction of the below-ground portion of buildings	NIISP		1st-4th quarters 1978	Mandatory technological rules for construction of the below-ground portion of buildings	Visit of 1 Yugoslav specialist to the USSR for 12 days in the 4th quarter of 1978 on the basis of equivalent exchange not involving foreign exchange for consultations. Delivery of the mandatory technological rules to the Yugoslav side (gratis)

1	2	3	4	5	6	7
Stage 2	Development of the methodology of designing the technology and organization of continuous operation of construction trusts	NIISP		1st-3d quarters 1977	Methodology of designing the technology and organization of the continuous operation of construction trusts	Visit of 1 Yugoslav specialist to the USSR for 12 days in the 3d quarter of 1977 on the basis of equivalent exchange not involving foreign exchange. Delivery of the methodology to the Yugoslav side (gratis)
Stage 3	Development of methodology of computing the reliability of "chain" construction	NIISP		2d quarter 1977-4th quarter 1978	Methodology of computing the reliability of "chain" construction	Visit of 1 Yugoslav specialist to the USSR for 12 days in the 4th quarter of 1978 on the basis of equivalent exchange not involving foreign exchange. Delivery of the methodology of the Yugoslav side (gratis)
Stage 4	Drafting of instructions related to technology and management in continuous-flow construction of apartment and public buildings, using modeling	NIISP		2d quarter 1978-1st quarter 1979	Instructions for designing the technology, organization and management in "chain" construction of apartment and public buildings on the basis of continuous	Visit of 2 Yugoslav specialists to the USSR for 12 days in the 1st quarter of 1979 on the basis of equivalent exchange not involving foreign exchange. Delivery

1	2	3	4	5	6	7
Stage 5	Development of a progressive new technology and organization of construction of apartment and public building projects	NIISP		3d quarter 1978-3d quarter 1979	Description of technology and organization of construction of apartment and public building projects	of instructions of the Yugoslav side (gratis) Visit of 1 Yugoslav specialist to the USSR for 12 days in the 1st quarter of 1979 on the basis of equivalent exchange not involving foreign exchange for mutual consultations. Mutual delivery of description of technology (gratis)
			JGC	3d quarter 1978-3d quarter 1979		Visit of 1 Soviet specialist to the SPRY for 12 days in the 3d quarter of 1979 on the basis of equivalent exchange not involving foreign exchange
5.1	Development of technology for production of reinforced concrete products from previously heated mixtures and drafting of recommendations for	NIISP		1st-3d quarters 1977	Description of technology for using reinforced-concrete products from previously heated concrete mixtures and recommendations for	Delivery of description of technology and recommendations to the Yugoslav side (gratis)

1	2	3	4	5	6	7
	tending the hot concrete during construction of cast-in-place structures				tending the hot concrete during construction of cast-in-place structures	
5.2	Discovery of unused potential for increasing labor productivity and the quality of construction in building construction with "sliding" curtain walls	JCC	2d-4th quarters 1977		Recommendations for increasing labor productivity and quality of construction in building construction with "sliding" curtain walls	Visit of 2 Soviet specialists to Yugoslavia for 12 days in the 4th quarter of 1977 on the basis of equivalent exchange not involving foreign exchange for familiarization with progressive methods of building construction with "sliding" curtain walls. Delivery of recommendations to the Soviet side (gratis)
5.3	Improvement of methods of apartment house construction with cast-in-place reinforced concrete using space-frame and large-panel outside walls	JCC	2d quarter 1978		Standard technological design for apartment house construction with cast-in-place reinforced concrete using space-frame and large-panel outside walls	Visit of 1 Soviet specialist to the SFRY for 12 days in the 2d quarter of 1978 on the basis of equivalent exchange not involving foreign exchange for consular familiarization

with methods of apartment house construction with cast-in-place reinforced concrete. Delivery of the technological design to the Soviet side (gratis)

5.4 Drafting of recommendations related to technology for apartment house construction with space-frame (or 3-dimensional blocks)

Nil

1st-3d quarters 1977

Recommendations related to technology for construction of apartment houses with space-frame

Visit of 1 Yugoslav specialist to the USSR for 12 days in the 3d quarter of 1977 on the basis of equivalent exchange not involving foreign exchange to study the results of the work and for consultation. Delivery of recommendations to the Yugoslav side (gratis)

5.5 Research and development of progressive technology and organization for apartment and public building construction with an increased number of stories by the

JCC

2d-3d quarters 1977

Proposals for improving the technology and organization of apartment house construction using the lift-slab method

Visit of 1 Soviet specialist to the SFPR for 12 days in the 4th quarter of 1977 on an equivalent basis not involving foreign exchange related to the organization

1	2	3	4	5	6	7
	method of lifting floor and ceiling slabs					and technology of building construction using the lift-slab method. Delivery of proposals to the Soviet side (gratis)
5.6	Research and development of a progressive technology and organization of skeleton construction of apartment and public buildings	JGC	4th quarter 1978-3d quarter 1979	Proposals for improvement of the technology and organization of skeleton construction of apartment and public buildings	Visit of 2 Soviet specialists to the SFRY for 12 days in the 3d quarter of 1979 on an equivalent basis not involving foreign exchange related to study of the results of the work and familiarization with the technology of skeleton construction of buildings. Delivery of proposals to the Soviet side (gratis)	

1	2	3	4	5	6	7
5.7	Development of methods of quality control of construction work on housing construction projects					
	Using precast reinforced concrete	NIISP		2d quarter 1978-1st quarter 1979		Mutual delivery of descriptions (gratias). Visit of 1 Yugoslav specialist to the USSR for 12 days in the 1st quarter of 1979 on an equivalent basis not involving foreign exchange for familiarization with methods of quality control of projects built with precast reinforced concrete
	Using cast-in-place reinforced concrete	JCC		1st-3d quarters 1979	Description of a method of quality control of construction work on housing projects using cast-in-place reinforced concrete	Visit of 1 Soviet specialist to the SFRY for 12 days in the 3d quarter of 1979 on an equivalent basis not involving foreign exchange for familiarization with methods of quality control of

1	2	3	4	5	6	7
						construction of projects with cast-in-place reinforced concrete
5.8	Preparation of surveys related to progressive technology and organization of apartment and public building construction with a larger number of stories	NIISP		1st-3d quarters 1979		Mutual delivery of surveys (gratis). Visit of 1 Yugoslav specialist to the USSR for 12 days in the 1st quarter of 1979 on an equivalent basis not involving foreign exchange for mutual consultations
4			JGC		Review of progressive technology and organization of apartment house construction with an increased number of stories	Visit of 1 Soviet specialist to the SFRY for 12 days in the 3d quarter of 1979 on an equivalent basis not involving foreign exchange for study and mutual adjustment of surveys
Stage 6	Drafting of recommendations for improvement of the technology and organization of finishing work: plastering and painting	NIISP		1st-3d quarters 1977	Proposals of both sides on improvement of technology and organization of finishing work	Mutual delivery of proposals (gratis). Visit of 1 Yugoslav specialist to the USSR for 12 days in the 3d quarter of 1977 on an equivalent basis not

1	2	3	4	5	6	7
						involving foreign exchange for consultations and familiarization with plastering and painting technology
	Laying of floors and finishing work		JGC	1st-4th quarters 1977		Visit of 2 Yugoslav specialists to the SFRY [sic] in the 4th quarter of 1977 on an equivalent basis not involving foreign exchange for consultations and familiarization with the technology of laying floors and finishing work
7	Preparation of working drawings for equipment to mechanize finishing work		JGC	4th quarter 1977-2d quarter 1978		Mutual delivery of working drawings and descriptions (gratis)
	Finishing work and laying floors					Visit of 1 Soviet specialist to the SFRY for 12 days in the 2d quarter of 1978 on an equivalent basis not involving foreign exchange for familiarization with production and the

1	2	3	4	5	6	7
	Painting	NIISP		2d-4th quarters 1978	Working drawings and description of work and use of power equipment	use of power equip- ment Visit of 1 Yugoslav specialist to the USSR for 12 days in the 4th quarter of 1978 on an equiva- lent basis not in- volving foreign ex- change for famil- iarization with production and use of power equipment
8	Stage Drafting of propos- als for improvement of technology and organization of finishing work		JGC	3d quarter 1977-2d quarter 1978		Mutual delivery of proposals (gratis). Visit of 1 Soviet specialist to the SFRY for 12 days in the 2d quarter of 1978 on an equiva- lent basis not in- volving foreign ex- change for consul- tations and famil- iarization with the organization and technology of fin- ishing work
		NIISP		2d-4th quarters 1978	Proposals for im- provement of tech- nology and organi- zation of finishing work	Visit of 1 Yugoslav specialist to the USSR for 12 days in the 4th quarter of

1978 on an equivalent basis not involving foreign exchange for consultation and familiarization with the organization and technology of fishing work

9.3 Development of a method of optimizing technological sets of power equipment for fishing work to equip a single crew and a specialized construction enterprise, using electronic computers

NIISP

1st-4th
quarters
1978

Method of computing the equipment program

Visit of 1 Yugoslav specialist to the USSR for 12 days in the 4th quarter of 1978 on an equivalent basis not involving foreign exchange for consultations and work related to Points 9.3 and 9.4 of the work plan. Delivery of the method and program to the Yugoslav side (gratis)

9.4 Drafting of instructions for selection and organization of the technical use of the set of power tools, instruments, accessories and devices for equipping

NIISP

1st-4th
quarters
1978

Instructions entitled "Selection and Organization of Technical Use of Set of Power Tools, Instruments and Devices for Equipping Crews Specialized in Fishing Work"

Delivery of instructions to the Yugoslav side (gratis)

1	2	3	4	5	6	7
	crews specialized in finishing work					
Stage 10	Drafting of proposals for reduction of building construction time	JCC	2d quarter 1977-2d quarter 1978	Proposals for intensification of construction of the above-ground portion of buildings	Visit of 2 Soviet specialists to the SFRY for 12 days in the 2d quarter of 1978 on an equivalent basis not involving foreign exchange for familiarization with the organization of work and study of methods of building construction. Delivery of proposals to the Soviet side (gratis)	
Stage 11	Preparation of the final report on the topic along with recommendations for technical-and-economic analysis of promising directions for development of technology and organization of apartment and public building construction	JCC	1st-4th quarters 1980	Reports on topic along with recommendations concerning prospects for development of the technology of apartment and public building construction	Mutual delivery of reports (gratis). Visit of 5 Soviet specialists to the SFRY in the 2d quarter of 1980 for mutual consultations (12 days). Visit of 5 Yugoslav specialists to the USSR in the 4th quarter of 1980 for the drafting and mutual adjustment of the report (12 days)	

Agreed equivalent for official travel: 60 person-days per year.

Appendix No 10 to the Protocol of the Fourth Meeting of the Standing Yugoslav-Soviet Subcommittee for Scientific-Technical Cooperation

Work Plan of Scientific-Technical Cooperation Between the Scientific Research Institute of the Construction Industry of Gosstroy in the USSR and the Yugoslav Construction Center (JGC) on the Topic: Improvement of the Technology and Organization of Construction of Industrial Projects and Complexes by Optimum Planning of Machinery and Use of Construction Machines and Power Tools and Small Equipment

No 1	Title of Topic and Stages of Work	Participating Organizations		Date of Completion of Work (year, quarter)	Form of Results	Organizational Meas- ures, Conditions for Delivery of Results (paid-gratis)
		In USSR	In SFRY			
		3	4	5	6	7
41	410-01 Improve- ment of the Technology and Organization of Construction of Industrial Proj- ects and Com- plexes by Opti- mum Planning of Machinery and Use of Construc- tion Machines and Power Tools and Small Equipment	NIISP, USSR Gos- stroy	JGC	1977-1980	Improved technologi- cal procedures for construction of in- dustrial buildings, normative and meth- odological docu- ments related to maintenance of con- struction and road machinery	

1	2	3	4	5	6	7
	Purpose of the project: increased labor productivity, shorter construction time, reduced construction cost of industrial products, higher level of industrialization, and improved equipment of construction enterprises				Report on topics along with recommendations	
Stage 1	Engineering preparation of the construction process	NIISP		1st quarter 1978-4th quarter 1980	Reports on the topic "Engineering Preparation of the Construction Process"	Delivery of reports to the Yugoslav side (gratis)
1.1	Drafting of instructions concerning organization and preparatory measures of the construction enterprise which it does according to the methods of assumption of responsibility for work items	NIISP		1st-4th quarters 1978	Instructions on organizational and preparatory measures	Visit of 1 Yugoslav specialist to the USSR for 12 days in the 4th quarter of 1978 on an equivalent basis not involving foreign exchange. Delivery of instructions to the Yugoslav side (gratis)

<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>
1.2	Preparation of recommendations on compiling and optimizing the calendar plan (annual program) of the work of a construction enterprise	NIISP		2d quarter 1978-1st quarter 1979	Recommendations for compilation and optimization of calendar plan (annual program) of the work of a construction enterprise	Visit of 1 Yugoslav specialist to the USSR for 12 days in the 1st quarter of 1979 on an equivalent basis not involving foreign exchange. Delivery of instructions to the Yugoslav side (gratis)
1.3	Drafting of normative documents related to organizational-and-economic preparation of a construction enterprise, using computers and the methods of mathematical economics	NIISP		2d quarter 1979-4th quarter 1980	Instructions on drafting and adopting planning and technological documentation of a construction enterprise	Visit of 2 Yugoslav specialists to the USSR for 12 days in the 4th quarter of 1980 on an equivalent basis not involving foreign exchange. Delivery of instructions to the Yugoslav side (gratis). Mutual delivery of reports (gratis)

1	2	3	4	5	6	7
Stage 2	Development of a progressive technology and organization of "chain" construction of industrial projects:					
	Of precast reinforced concrete and of cast-in-place reinforced concrete	NIISP	JGC	2d quarter 1977-2d quarter 1980	Scientific-technical report entitled "Improvement of Technology and Organization of 'Chain' Construction of Industrial Projects"	
2.1	Development of a technology for manufacturing products and fabrications from previously heated concrete mixtures by means of steam which can be used under factory conditions	NIISP		1st-3d quarters 1977	List of technology for manufacturing products and fabrications from concrete mixtures previously heated with steam under factory (off-site) conditions	Visit of 2 Yugoslav specialists to the USSR for 12 days in the 3d quarter of 1977 on an equivalent basis not involving foreign exchange for familiarization with the technology and its study. Delivery of descriptions of the technology to the Yugoslav side (gratias)

<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>
2.2	Research and development of progressive technology and organization of construction of industrial projects:		JGC	2d quarter 1977-2d quarter 1978	Description of technology related to organization of construction of industrial projects:	Mutual delivery of technology (gratis)
	Of cast-in-place reinforced concrete				Of cast-in-place concrete	Visit of 2 Soviet specialists to the SPRY for 12 days in the 4th quarter of 1977 and in the 2d quarter of 1978 on an equivalent basis not involving foreign exchange for consultations and study of the technology. Visit of 1 Yugoslav specialist to the USSR for 12 days in the 4th quarter of 1978 on an equivalent basis not involving foreign exchange to familiarize himself with the technology in practice and to study it
	Of precast reinforced concrete	NIISP		1st-4th quarters 1978	Of precast reinforced concrete	
2.3	Drafting of instructions for technology and	NIISP		2d-4th quarters 1978	Instructions for assembling precast reinforced-cement	Delivery of instructions to the Yugoslav side (gratis)

1	2	3	4	5	6	7
	complete mechanization of the assembly of precast reinforced-cement partitions of industrial buildings				partitions of industrial buildings	
2.4	Drafting of instructions for optimum organization and technology of conveyor and block erection of ceilings of industrial buildings	NIISP		2d quarter 1978-1st quarter 1979	Instructions for conveyor and block erection of ceilings of industrial buildings using space-frames and fabrications made from them	Visit of 1 Yugoslav specialist to the USSR for 12 days in the 1st quarter of 1979 on an equivalent basis not involving foreign exchange. Delivery of instructions to the Yugoslav side (gratis)
2.5	Development of methods of quality control of construction of projects:					
	Of precast reinforced concrete	JGC		4th quarter 1978-3d quarter 1979	Proposals for quality control of construction of projects of precast reinforced concrete	Visit of 2 Soviet specialists to the USSR [sic] for 12 days in the 3d quarter of 1979 on an equivalent basis not involving foreign exchange to examine and study systems of quality

1	2	3	4	5	6	7
						control of construction in practice. Delivery of proposals to the Soviet side (gratis)
	Of cast-in-place reinforced concrete		JCC	3d quarter 1979-2d quarter 1980	Proposals for quality control of construction of projects of cast-in-place reinforced concrete	Visit of 3 Soviet specialists to the SFRY for 12 days in the 2d quarter of 1980 on an equivalent basis not involving foreign exchange to examine and study systems of quality control of construction in practice. Delivery of proposals to the Soviet side (gratis)
Stage 3	Analysis of the technical level of full mechanization and use of machines in the construction industry	NIISP	JCC	3d-4th quarters 1978	Report on domestic and foreign experience	Mutual delivery of reports (gratis)
Stage 4	Development of a method of planning needs for machines and	NIISP		1st-3d quarters 1977	Method of planning needs for machines and machinery (needs of construction enterprises	Mutual delivery of methods (gratis). Visit of 1 Yugoslav specialist to the

1	2	3	4	5	6	7
	machinery (needs of construction enterprises for machines and equipment, including algorithms and programs for electronic computers)				for machines and machinery, including algorithms and programs of electronic computers)	USSR for 12 days in the 3d quarter of 1977 on an equivalent basis not involving foreign exchange
			JGC	1st-4th quarters 1977		Visit of 1 Soviet specialist to the SFRY for 12 days in the 4th quarter of 1977 on an equivalent basis
Stage 5	Drafting of a method of working out standards related to determination of the needs of construction enterprises for the principal machines		JGC	1st and 2d quarters 1978	Method of working out standards related to determination of the needs of construction enterprises for the principal machines	Visit of 1 Soviet specialist to the SFRY for 12 days in the 2d quarter of 1978 on an equivalent basis not involving foreign exchange. Delivery of the method to the Soviet side (gratis)
Stage 6	Development of a method related to determination of the need for power tools and minor power equipment, mechanized instruments and	NIISP		2d quarter 1978-1st quarter 1979	Method of computation and program for electronic computers	Mutual delivery of method and program (gratis). Visit of 1 Yugoslav specialist to the USSR for 12 days in the 1st quarter of 1979 on an equivalent basis not involving foreign exchange

hoists, development of a method of computation and programs for electronic computers

Visit of 1 Soviet specialist to the SFRY for 12 days in the 3d quarter of 1979 on an equivalent basis not involving foreign exchange

Stage 7

NIISP

Preparation of methodological recommendations concerning use of standards related to needs for construction machines and power tools and minor power equipment

1st-4th quarters 1980

Methodological recommendations for use of norms in connection with needs for construction machines and power tools and minor power equipment

Visit of 1 Yugoslav specialist to the USSR for 12 days in the 4th quarter of 1980 on an equivalent basis not involving foreign exchange. Delivery of recommendations to the Yugoslav side (gratis)

Stage 8

NIISP

Improvement of organization related to technical use, methods of ensuring operating safety, and repair of construction

2d quarter 1977-4th quarter 1980

Report on topic along with recommendations for improving methods of maintaining construction machines

Mutual delivery of reports (gratis)

1	2	3	4	5	6	7
	machines and power tools and minor power equipment					
8.1	Analysis and standardization of principal terms for the system of technical servicing, repair and methods of testing	NIISP		1st-3d quarters 1977	Coordinated draft of standard technology	Mutual delivery of drafts of standardized technology (gratis). Visit of 1 Yugoslav specialist to the USSR for 12 days in the 3d quarter of 1977 on an equivalent basis not involving foreign exchange for consultations and work related to Points 8.1, 8.3 and 8.3.1 of the work plan
		JGC		2d-4th quarters 1978		Visit of 1 Soviet specialist to the SFRY in the 4th quarter of 1977 on an equivalent basis not involving foreign exchange in connection with completion of the work under Points 8.1, 8.3 and 8.3.1 of the work plan.

1	2	3	4	5	6	7
8.2	Analysis of present methods of technical operation, repair and guaranteeing safety in the use of construction and road machines (GMP) [expansion unknown]		JGC	1st and 2d quarters 1978	Survey of methods of technical operation	Mutual delivery of surveys (gratis). Visit of 1 Soviet specialist to the SFRY in the 2d quarter of 1978 on an equivalent basis not involving foreign exchange to study existing methods of technical operation, repair and maintenance of the operating reliability of construction and road machines
		NIISP		3d and 4th quarters 1978		Visit of 1 Yugoslav specialist to the USSR for 12 days in the 4th quarter of 1978 on an equivalent basis not involving foreign exchange to study methods of technical operation of construction and road machines
8.3	Drafting of normative and methodological materials on the	NIISP		1st-3d quarters 1977	Standards and methodological materials on maintaining construction and	Mutual delivery of standards and methodological materials (gratis)

1	2	3	4	5	6	7
	maintenance of construction and road machines in operating condition		JGC	2d-4th quarters 1977	road machines in operating condition	
8.3.1	Drafting of methodological materials related to determination of the economic feasibility of periodic technical servicing of construction machines	NIISP		1st-3d quarters 1977 2d-4th quarters 1977	Recommendations for determination of the economic feasibility of periodic technical servicing of construction machines	Mutual delivery of recommendations (gratis)
8.3.2	Drafting of methodological materials related to evaluation of the level of reliability of construction and road machines in operation	NIISP		1st-3d quarters 1977	Evaluation of the level of reliability of GPM [expansion unknown, but reference is presumably to construction and road machines---translator's note] in operation	Visit of 1 Yugoslav specialist to the USSR for 12 days in the 3d quarter of 1977 on an equivalent basis not involving foreign exchange for consultations and work related to Points 8.3.2, 8.4 and 8.4.1 of the work plan. Delivery of the method to the Yugoslav side (gratis)

<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>
8.4	Drafting of operating requirements for rated indicators of reliability of construction and road machines	NIISP		1st-3d quarters 1977	Quantitative indicators	Mutual delivery of quantitative indicators (gratis)
			JGC	2d-4th quarters 1977		Visit of 1 Soviet specialist to the SFRY for 12 days in the 4th quarter of 1977 on an equivalent basis not involving foreign exchange for familiarization and consultations related to the system for reliability of construction and road machines
8.4.1	Development of a method of determining the rated indicators of reliability of construction and road machines	NIISP		2d and 3d quarters 1977	Method of determining rated indicators of the reliability of construction and road machines	Delivery of the method of the Yugoslav side (gratis)
8.4.2	Development of a method of determining the operating requirements for rated indicators of reliability of construction		JGC	3d quarter 1977-2d quarter 1978	Method of determining the operating requirements for rated indicators of the reliability of construction and road machines	Mutual delivery of methods (gratis). Visit of 1 Soviet specialist to the SFRY for 12 days in the 2d quarter of 1978 on an equivalent basis not

1	2	3	4	5	6	7
	and road machines					involving foreign exchange for mutual adjustment of the stages of the project and method of execution
		NIISP		1st-4th quarters 1978		Visit of 1 Yugoslav specialist to the USSR for 12 days in the 4th quarter of 1978 on an equivalent basis not involving foreign exchange for the study and mutual adjustment of the method
8.5	Development of sets of models and algorithms related to creating the best structure for supplying spare parts to construction enterprises		JCC	2d quarter 1979-2d quarter 1980	Mathematical model and algorithms	Mutual delivery of mathematical models and algorithms (gratis). Visit of 1 Soviet specialist to the SFRY for 12 days in the 2d quarter of 1980 on an equivalent basis not involving foreign exchange for consultations
		NIISP		4th quarter 1979-4th quarter 1980		Visit of 1 Yugoslav specialist to the USSR for 12 days in the 4th quarter of

1	2	3	4	5	6	7
						1980 for consultations
8.5.1	Statistical study of rates of consumption and deliveries of spare parts and units for installation in mechanization divisions and repair enterprises	NIISP		4th quarter 1978	Material of the study	Visit of 1 Yugoslav specialist to the USSR for 12 days in the 4th quarter of 1978 on an equivalent basis not involving foreign exchange for practical familiarization with the setting of standards governing consumption of spare parts for construction and road machines, delivery of materials to the Yugoslav side (gratis)
8.5.2	Preparation of the draft of the structure and algorithms for supplying units for installation and parts to divisions for machines and machinery	NIISP		1st quarter 1978-1st quarter 1979	Draft of the structure, algorithms	Delivery of the draft of the structure and algorithms to the Yugoslav side (gratis)

<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>
8.6	Drafting of methodological recommendations related to ensuring reliability of construction and road machines in operation		JGC	2d quarter 1979-2d quarter 1980	Methodological recommendations	Mutual delivery of drafts of methodological recommendations (gratis). Visit of 1 Soviet specialist to the SFRY for 12 days in the 2d quarter of 1980 on an equivalent basis not involving foreign exchange for consultations
		NIISP		4th quarter 1979-4th quarter 1980		Visit of 1 Yugoslav specialist to the USSR for 12 days in the 4th quarter of 1980 on an equivalent basis not involving foreign exchange for consultations and work related to the drafting of methodological recommendations
8.6.1	Preparation of algorithms for optimization of the structure of the repair cycle for construction and road machines	NIISP		1st quarter 1978-1st quarter 1979	Algorithm for optimization for the structure of the repair cycle of construction and road machines	Mutual delivery of algorithms (gratis). Visit of 2 Yugoslav specialists to the USSR for 12 days in the 1st quarter of 1979 on an equivalent

<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>
						basis not involving foreign exchange for consultations
			JCC	3d quarter 1978-3d quarter 1979		Visit of 2 Soviet specialists to the SFRY for 12 days in the 3d quarter of 1979 on an equivalent basis not involving foreign exchange for consultations and correlation of the work prepared
9	Writing of the final report on the topic of co-operation	NIISP		2d-4th quarters 1980	Report on the topic of cooperation	Mutual delivery of reports (gratis)
	Agreed equivalent for official travel: 60 person-days per year.					

Appendix No 11 to the Protocol of the Fourth Meeting of the Standing Yugoslav-Soviet Subcommittee
for Scientific-Technical Cooperation

Work Plan of Scientific-Technical Cooperation of the All-Union Scientific Research Institute for Antibiotics of the Ministry of Medical Industry and the Research and Development Institute of the Krka Pharmaceutical and Chemical Factory (Novo Mesto, Yugoslavia) on the Topic: Development and Improvement of Methods of Obtaining Antibiotics and Their Clinical Study

No	Project Title	Participating Organizations			Date of Commence-ment and Completion of Work (year, quarter)	Form of Results	Organizational Measures, Conditions for Delivery of Results (paid-gratis)
		In USSR	In SFRY				
1	2	3	4	5	6	7	
	411-01 Development and Improvement of Methods of Obtaining Antibiotics and Their Clinical Study	VNIIA	Krka Institute	1977-1980	Methods of obtaining antibiotics and recommendations for their use		
1	Subtopic: Development of Genetic Methods of Selection and Creation of New Strains of Producers of Antibiotics	VNIIA	Krka Institute	1977-1980	Method of obtaining strains of producers of antibiotics		
1.1	Drafting and mutual adjustment of research program	VNIIA	Krka Institute	3d quarter 1977	Program for research in VNIIA and the Krka Institute		Visit of 1 Krka specialist to VNIIA for 6 days in the 2d quarter of 1977

1	2	3	4	5	6	7
1.2	Development of methods of oriented selection of highly active mutants of producers of OTC [oxytetracycline] and TC [tetracycline]		Krka Institute	4th quarter 1977-1980	Scientific reports on methods of obtaining highly active strains of OTC producers of OTC and TC	Delivery to VNIIA of scientific reports (each year) on methods when work is completed (gratis). Visit of 1 Krka specialist to VNIIA for 6 days in the 3d quarter of 1977
1.3	Development of methods of oriented selection of highly active mutants of producers of Penicillin G and Penicillin V	VNIIA		4th quarter 1977-1980	Scientific reports. Methods of obtaining highly active strains of Penicillin G and Penicillin V	Delivery to the Krka Institute of scientific reports (each year) on methods following completion of the work (gratis). Visit of 1 VNIIA specialist to Krka for 6 days in the 3d quarter of 1979 and of 1 specialist for 6 days in the 4th quarter of 1980
2	Subtopic: Organization of Clinical Tests and Registration in Yugoslavia of Original Antibiotics Against Cancer Developed by VNIIA	VNIIA	Krka Institute	1977-1980	Conclusion concerning the results of clinical tests of variamycin, rheumycin, mitramycin and certain other cytostatics and concerning the possibility of their	

registration in the SFRY

2.1 Preparation for delivery of materials on the study of the pharmacological properties and antitumor effect of the anticancer antibiotics variamycin, rheumycin, mitramycin and other new cytostatics--drafting and mutual coordination of the clinical testing program

VNIIA

1977-1st quarter 1978

Scientific reports on study of the properties of antibiotics. Coordination of the clinical testing program

Delivery to the Yugoslav side of material on the study of the antibiotics (gratis). Visit of 2 VNIIA specialists to the SFRY for 6 days in the 1st quarter of 1978

2.2 Clinical tests of the preparations in the SFRY

Krka Institute

2d quarter 1978-1980

Scientific reports on clinical tests

a) Delivery to the Yugoslav side of the relevant preparations of antibiotics (gratis)

b) Delivery to the Soviet side of a scientific report on clinical tests (gratis)

2.3 Discussion of results of clinical tests of antibiotics and possibility

VNIIA

Krka Institute

2d quarter 1979-1980

Conclusion concerning the feasibility of registering the preparations

Visit of 2 specialists of the Krka Institute to VNIIA

1	2	3	4	5	6	7
	of their registration in Yugoslavia					for 6 days in the 2d quarter of 1980
3	Subtopic. Development of Original Methods of Obtaining Semisynthetic Tetracycline Antibiotics	VNIIA	Krka Institute	2d quarter 1977-4th quarter 1978	New methods of obtaining preparations and conclusions concerning the possibility of their being patented	
3.1	Writing of informative reports on the tests conducted and the use of the preparations and on whether they can be patented in the USSR, the SFRY and other countries	VNIIA	Krka Institute	3d and 4th quarters 1977	Informative reports	Mutual exchange of informative reports (gratis)
3.2	Drafting and coordination of a program for study of methods of obtaining semisynthetic tetracycline antibiotics which can be patented	VNIIA	Krka Institute	4th quarter 1977	Coordination of the research program	Visit of 1 specialist of the Krka Institute to VNIIA for 6 days in the 1st quarter of 1978
3.3	Conduct of research and preparation of a method of obtaining	VNIIA	Krka Institute	4th quarter 1978	Scientific reports on the results of research	Mutual exchange of scientific reports (gratis)

1	2	3	4	5	6	7
	semisynthetic tetracycline anti- biotics					
3.4	Clarification of the possibilities of patenting the joint preparations	VNIIA	Krka Insti- tute	3d and 4th quarters 1978	Conclusion concern- ing patentability	Visit of 1 VNIIA specialist to the SFRY for 6 days in the 4th quarter of 1978
4	Subtopic: Study of New Synthetic Cephalosporins Based on 7-ACK	VNIIA	Krka Insti- tute	3d quarter 1977-1980	Scientific reports on results of re- search conducted	
4.1	Synthesis of cepha- losporin deriva- tives on the basis of 7-ACK and their study	VNIIA	Krka Insti- tute	3d quarter 1977-1980	Scientific reports on results of re- search	Mutual exchange of scientific research after completion of the work (gratis)
4.2	Discussion of re- sults of the re- search of VNIIA and the Krka In- stitute:					
a)	In the SFRY	VNIIA	Krka Insti- tute	3d quarter	Protocol on discus- sion	Visit of 1 VNIIA specialist to the SFRY for 10 days in the 3d quarter of 1978
b)	In the USSR	VNIIA	Krka Insti- tute	3d quarter 1979	Protocol on discus- sion	Visit of 1 special- ist of the Krka In- stitute to VNIIA

1	2	3	4	5	6	7
						for 10 days in the 3d quarter of 1979
5	Subtopic: Methods of Isolating and Concentrating Enzymes by Means of Membrane Technology	VNIIA	Krka Institute	1978 and 1979	Membrane technology devised	
5.1	Preparation of documentation on methods of isolating and concentrating enzymes by means of membrane filters	VNIIA	Krka Institute	1978	Scientific and technological documentation prepared	Delivery of documentation of VNIIA to the Krka Institute. Visit of 1 Krka specialist to VNIIA for 6 days in the 3d quarter of 1978
5.2	Application of membrane technology for isolating neutral proteases and evaluation of the technological value of this procedure	VNIIA		1979	Scientific and technological documentation prepared	Visit of 1 VNIIA specialist to Krka for 6 days in the 3d quarter of 1979
6	Subtopic: Preparation of Reports and Writing of Recommendations Using the Results of the Work Done on This Topic in the USSR and the SFRY	VNIIA		4th quarter 1980	Joint report along with recommendations	Visit of 1 Krka Institute specialist to VNIIA for 6 days in the 3d quarter of 1980. Visit of 1 VNIIA specialist to Krka for 6 days in the 4th quarter

Agreed equivalent for visits of specialists on an equivalent basis not involving foreign exchange: 52 person-days.

Appendix No 12 to the Protocol of the Fourth Meeting of the Standing Yugoslav-Soviet Subcommittee for Scientific-Technical Cooperation

Work Plan of Scientific-Technical Cooperation Between the Institute of Normal Physiology imeni P. K. Anokhin of the USSR Academy of Medical Sciences and the Bureau of Physiology of the Medical School of Novi Sad University in the SFRY on the Topic: Study of Neurophysiological Mechanisms of Behavior on the Basis of the Theory of Functional Systems

No	Project Title	Participating Organizations		Commence-ment and Completion Time	Form of Results		Organizational Measures, Conditions for Transfer of Results of Work
		In USSR	In SFRY				
1	2	3	4	5	6	7	
2.01	Study of Neurophysiological Mechanisms of Behavior on the Basis of the Theory of Functional Systems	NIINF imeni P. K. Anokhin, AMN USSR	Bureau of Physiology of the Medical School of Novi Sad University, SFRY	1976-1980	1. Joint conferences in modeling the systemic processes of behavior acts 2. Conference on introduction of the method of quantitative evaluation of bioelectric activity of the brain 3. Creation in the SFRY (Novi Sad University) of the scientific facilities for research using		
	Purpose of the project: study of the neurophysiological mechanisms of formation and realization of a number of stages of the functional system of an oriented behavioral act						

1	2	3	4	5	6	7
					microelectrode techniques on the free behavior of animals	
					4. Joint scientific-technical report	
1	Analysis of summary bioelectric activity of the cortex and subcortical structures of the cerebrum of animals in connection with rapid change of the pain reinforcement	NIINF Imeni P. K. Ano- khin, AMN USSR		1st-4th quarters 1976	Scientific report on study of neurophysiological mechanisms of orientation-test reaction to discrepancy	Delivery of reports to the Yugoslav side (gratis)
2	Analysis of evoked potentials of the cortex and the subcortical structures upon repeated display of a light and pain stimulus		ZFMF, SFRY	1st-4th quarters 1976	Scientific report on the rate of involvement of structures of the cerebrum of rabbits according to the criterion of the occurrence of evoked potentials when animals are conditioned by light stimuli to expect food or pain reinforcement	Visit of Yugoslav specialists to the USSR for participation in research and for conducting research not involving foreign exchange (done). Delivery of reports to the Soviet side (gratis)
3	a) Study of the characteristics of reactions of	NIINF Imeni P. K.		1st-3d quarters 1977	Scientific report on characteristics of the reaction of	Visit of a Yugoslav specialist to the USSR for 60 days to

1	2	3	4	5	6	7
	certain neurons of the cortex and cortical structures of the cerebrum when food motivation is developed in the animal	Anokhin, AMN USSR			neurons of the cortex and subcortical structures when motivation to food is formed	participated in experiments and in development of the methods
b)	Development of a method of quantitative evaluation of the level of motivation based on the indicators of cellular activity				Method of quantitative evaluation of the level of motivation based on indicators of cellular activity	
4	Study of the characteristics of mutual influences of the cortex and subcortical structures of the cerebrum on the basis of indicators of summary and evoked bioelectric activity in animals during formation of an oriented act of behavior in response to food	ZPMF, SFRY	ZPMF, SFRY	1st-4th quarters 1977	Scientific reports on the studied characteristics of mutual influences of the cortex and subcortical structures during formation of behavior in response to food	Visit of 1 Soviet specialist to the SFRY for 60 days, not involving foreign exchange, for participation in experiments
5	Holding of a symposium entitled	ZPMF, SFRY	ZPMF, SFRY	4th quarter 1977	Papers delivered at the symposium	Visit of 5 Soviet specialists to the

1	2	3	4	5	6	7
	"Principles and Mechanisms of Functional Systems of the Organism" during the 10th Congress of Yugoslav Physiologists (in Novi Sad)					SFRY for 5 days to participate in the 10th Congress of Yugoslav Physiologists
5	Preparation of a summary annual scientific report	NIINF imeni P. K. Ano- khin, AMN USSR		4th quarter 1977- 1st quarter 1978	Annual summary report	Delivery of the summary report to the Yugoslav side (gratis)
7	Studies of participation of central neurons in the process of cortico-subcortical reverberation of stimulation			1st-4th quarters 1978	Scientific report on the results of the studied neuron characteristics of cortico-subcortical reverberation of stimulation	Visit of a Yugoslav specialist to the USSR for 90 days for participation in experiments
8	a) Electrocephalographic study of cortico-subcortical reverberation of stimulation	ZFMF, SFRY		1st-4th quarters 1978	Scientific report on electrocephalographic study of cortico-subcortical reverberation of stimulation	Delivery of report to the Soviet side (gratis)

1	2	3	4	5	6	7
b)	Organization of complete apparatus for recording and processing neuron activity and adoption of new methods of recording neuron activity of different structures of the brain under conditions of free behavior		ZEMF, SFRY	1st-4th quarters 1978	Completion of apparatus and introduction of a method of recording neuron activity on the basis of the Physiology Bureau of the School of Medicine in Novi Sad, Yugoslavia	Visit of a Soviet specialist to the SFRY for 90 days to complete apparatus, to study the results and to adopt a plan for scientific work in the 1979/1980 academic year
9	Drafting of the general annual report	NIINF imeni P. K. Ano- khin, AMN SSSR		4th quarter 1978- 1st quarter 1979	Summary annual scientific report	Delivery of report to the Yugoslav side (gratis)
10	a) Analysis of cortical neuron correlates of the decisionmaking process in connection with instrumental behavior for	NIINF imeni P. K. Ano- khin, AMN SSSR		1st-4th quarters 1979	Scientific report and recommendations for cybernetic simulation of the behavioral act	Delivery of the material to the Yugoslav side
	b) Drafting of recommendations for cybernetic simulation of					

1	2	3	4	5	6	7
	systemic processes of the behavioral act					
11	Analysis of activity of individual neurons of different regions of the cerebral cortex related to changes in level of the motivating stimulus	ZFMF, SFRY	1st-4th quarters 1979	Scientific report and analysis of activity of individual neurons related to change in level of motivating stimulus	Delivery of report to the Soviet side, visit of a Soviet specialist to the SFRY for participation in experiments and to study recommendations for cybernetic simulation of systemic processes (60 days)	
12	Participation in the seminar entitled "Integrative Function of the Neuron" as part of the seminar entitled "Development of General Theory of Functional Systems"	NIINF imeni P. K. Anokhin, AMN SSSR	1st quarter 1979	Papers delivered at the seminars	Visit of 3 Yugoslav specialists to the USSR for 5 days to participate in the seminar	
13	Preparation of the summary annual report	NIINF imeni P. K. Anokhin, AMN SSSR	4th quarter 1979-1st quarter 1980	Summary annual report	Delivery of the summary report to the Yugoslav side	

1	2	3	4	5	6	7
14	Studies of characteristics of reactions of central neurons in various stages of oriented behavior under conditions of inhibition of protein biosynthesis			1st-4th quarters 1980	Scientific report and publication of research results	Visit of a Yugoslav specialist to the USSR for 30 days to participate in experiments
15	An analysis of activity of individual neurons of various regions of the cerebrum related to changing parameters of pain reinforcement	ZFMF, SFRY		1st-4th quarters 1980	Scientific report and analysis of activity of individual neurons related to changing parameters of pain stimulus	Delivery of report to the Soviet side (gratis)
16	Holding of a joint symposium on the topic "Study of Neurophysiological Mechanisms of Oriented Behavior on the Basis of the Theory of the Functional Systems of the Organism" in the Physiology Bureau in Novi Sad Additional conditions of the project and use of the results	ZFMF, SFRY		4th quarter 1980	Papers delivered at the symposium	Visit of 5 Soviet specialists to the SFRY for 5 days to participate in the final symposium

The plan is to be fulfilled on a reciprocal basis not involving foreign exchange. The approximate equivalent basis of exchange agreed on is 250 days for each side (during the project the equivalent will be stated in detail each year).

Appendix No 13 to the Protocol of the Fourth Meeting of the Standing Yugoslav-Soviet Subcommittee for Scientific-Technical Cooperation

Work Plan of Cooperation Between the Institute of Machine Reliability and Service Life of the Belorussian Academy of Sciences and the School of Mechanical Engineering of Kragujevac University (SFRY) on the Topic: Study, Evaluation and Improvement of Reliability of Machine Tools, Motor Vehicles and Tractors Using Computers and Radioisotope Methods of Monitoring Wear

No	Project Title	Participating Organizations		Commence- ment and Completion Time (year, quarter)	Form of Results	Organizational Measures, Conditions for Transfer of Results of Work (paid-gratis)
		USSR	SFRY			
1	2	3	4	5	6	7

Topic: Study, Evaluation and Improvement of Reliability of Machine Tools, Motor Vehicles and Tractors Using Computers and Radioisotope Methods of Monitoring Wear

INDMAS MFK
1st quarter 1978-4th quarter 1980
1) Prototypes of highly reliable friction assemblies with adaptors and recommendations concerning use in USSR and SFRY industry

Purpose: development of methods

1	2	3	4	5	6	7
	of diagnosing and evaluating the reliability of machines					
	Work on the design and application of highly reliable designs of assemblies in machine tools, motor vehicles and tractors				2) Programs and algorithms for evaluation of reliability of assemblies of machine tools and transmissions in motor vehicles and tractors	
1	Study of tribological phenomena in parts of machines and mechanisms using radioactive isotopes	INDMAS	MFK	1st quarter 1978-4th quarter 1979	Scientific-technical report	Mutual exchange of scientific-technical reports (gratias)
	a) Sliding guides on automatic lines		MFK			
	b) Rolling-element bearings of composite units and automatic lines		MFK			
	c) Rolling-element bearings	INDMAS				

<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>
	In Internal grinders					
	d) Transmission gears of trucks and tractors	INDMAS				
	e) Transmission gears of pas- senger cars		MFK			
	f) Cutting tools		MFK			
1.1	Drafting of a re- search program	INDMAS	MFK	2d quarter 1978	Research program	Exchange of programs
1.1.1	Drafting of a program and de- velopment of a method of test- ing the process of bearing and gear wear and discussion of this subject	INDMAS	MFK	2d quarter 1978	Testing program	Visit of 3 special- ists to the SPRY for 15 days (recip- rocal not involving foreign exchange)
1.2	Experimental study of the in- fluence of vari- ous design, technological and operating factors on re- sistance to wear	INDMAS	MFK	2d quarter 1978	Scientific-technical report	

1	2	3	4	5	6	7
	and on service life:					
	a) Of sliding guides of automatic lines		MPK			
	b) Of rolling-element bearings of composite units and automatic lines		MPK			
	c) Of rolling-element bearings of internal grinders	INDMAS				
	d) Of transmission gears of trucks and tractors	INDMAS				
	e) Of transmission gears of passenger cars		MPK			
1.2.1	Discussion and mutual agreement concerning recommendations on increasing resistance to wear and service life	INDMAS	MPK	2d quarter 1979	Mutual agreement and recommendations on increasing the service life	Visit of 3 specialists to the USSR for 15 days (on reciprocal basis not involving foreign exchange)

1	2	3	4	5	6	7
2	Development of a computer method of evaluating the reliability of machine tools, motor vehicles and tractors	INDMAS	MPK	4th quarter 1980	Programs and algorithms for computing reliability	Exchange of programs and algorithms (gratis)
2.1	Development of a program for computing reliability of motor vehicle and tractor transmissions	INDMAS	MPK	4th quarter 1978	Programs for computing transmission reliability	Exchange of programs (gratis)
2.1.1	Discussion of the program for computing reliability of motor vehicle and tractor transmissions and mutual agreement on it	INDMAS	MPK	4th quarter 1979	Report	Visit of 3 specialists to the USSR for 15 days (on reciprocal basis not involving foreign exchange)
2.2	Development of a program for computing the load-bearing systems of motor vehicles and grinders and mutual agreement on it		MPK	4th quarter 1979	Report	Visit of 3 specialists to the SFPRY for 15 days (on reciprocal basis not involving foreign exchange)

1	2	3	4	5	6	7
2.2	Development of a program for computing reliability of grinders	INDMAS	MFK	4th quarter 1980	Program for computing reliability	Exchange of programs
3	Exploration for ways of increasing reliability of machine tools, motor vehicles and tractors on the basis of optimization and structure, lubricant selection and application of adaptive systems using radioactive and other indicators of the condition of assemblies	INDMAS	MFK	4th quarter 1979	Prototypes of assemblies of machines and adaptive systems. Recommendation for lubricant selection	Exchange of prototypes and scientific-technical reports (gratias)
3.1	Development of a method of increasing resistance to wear and reduction of vibrational activity of transmission gears of motor vehicles and tractors by introducing	INDMAS		4th quarter 1979	Methods work and prototypes of gears with increased resistance to wear	Exchange of scientific-technical reports (gratias)

<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>
3.1.1	Discussion of designs and results of tests of gears with reduced vibrational activity, joint verification tests	INDMAS	MFK	2d quarter 1980	Report	Visit of 3 specialists to the SFRY for 15 days (reciprocal basis not involving foreign exchange)
3.2	Selection of optimum structures of truck and tractor transmissions	INDMAS		4th quarter 1980	Scientific-technical report	Exchange of scientific-technical reports (gratis)
3.3	Selection of optimum lubricants:				Recommendations for lubricant selection	Exchange of scientific-technical reports (gratis)
	a) Of slide guide of automatic lines		MFK			
	b) Of rolling-element bearings of assemblies of composite units and automatic lines		MFK			
	c) Of rolling-element bearings of internal grinders	INDMAS				

1	2	3	4	5	6	7
	d) Of transmission gears of passenger cars		MFK			
	e) Of cutting tools		MFK			
3.4	Development and manufacture of adaptive systems for machine tools:			4th quarter 1980	Prototypes of adaptive systems	Exchange of prototype types (gratis)
	a) With radioactive indicators of tool wear		MFK			
	b) With inductive sensors of displacement of the grinder spindle	INDMAS				
3.5	Testing of prototype systems, discussion of the testing results and mutual agreement on recommendations concerning their use in USSR and SFRY industry	INDMAS	MFK	4th quarter 1980	Report and mutual agreement related to recommendations on use of the adaptive systems developed in USSR and SFRY industry	Visit of 3 specialists to the USSR for 15 days (on reciprocal basis not involving foreign exchange)

Supplemental conditions applicable to the project and to use of the results

Should additional joint work be done on experimental verification of the effectiveness of the designs of machine assemblies and adaptive systems developed, the sides shall mutually agree in a separate protocol on the dates of performance, the number of specialists of INDMAS and MFK participating in the testing, and the place where the work is to be done.

The equivalent agreed on for reciprocity not involving foreign exchange is 270 person-days.

Appendix No 14 to the Protocol of the Fourth Meeting of the Standing Yugoslav-Soviet Subcommittee for Scientific-Technical Cooperation

Work Plan of Scientific-Technical Cooperation Between the All-Union Scientific Research Institute for the Livestock Feed Industry (Georgian Affiliate of VNIKP, Tbilisi) of the USSR Ministry of Material Reserves and the School of Technology, OOUR [Basic Organization of Associated Labor] Bureau for Livestock Feed Technology of Novi Sad, on the Topic: Development of Rapid Methods of Determining Vitamins, Trace Elements, Calcium and Phosphorus in Raw Materials and Livestock Feed

No	Project Title	Participating Organizations		Commencement and Completion Time (year, quarter)	Designation of Completed Work	Organizational Undertakings, Conditions for Delivery of the Results of the Work (paid-gratis)
		USCR	SFRJ			
1	414-01 Topic: Development of Rapid Methods of Determining Vitamins,	3	4	5	6	7

414-01 Topic: Development of Rapid Methods of Determining Vitamins, School of Technology

Recommendations for introduction of rapid methods of determining

1	2	3	4	5	6	7
	Trace Elements, Calcium and Phos- phorus in Raw Mate- rials and Livestock Feed		of Novi Sad		vitamins, trace elements, calcium and phosphorus into livestock feed pro- duction	
	Purpose of the proj- ect: increasing the accuracy of analysis and reduc- tion of the time required					
	Stages of the project:					
1	Compilation of draft programs and re- search methods re- lated to develop- ment of rapid meth- ods of determining the following in raw materials and livestock feed:			4th quar- ter 1977	Draft programs and research methods	Mutual exchange of draft programs and research methods (gratis)
	a) Vitamins					
	b) Trace elements, calcium and phos- phorus on an atomic absorption device	VNIKP				
2	Discussion of draft programs and re- search methods for	VNIKP	TF	1st quar- ter 1978	Mutual agreement on programs and re- search methods	Visit of 2 Yugoslav specialists to the

development of rapid methods of determining vitamins, trace elements, calcium and phosphorus in raw materials and livestock feed and mutual agreement on them

USSR for 10 days (reciprocal basis not involving foreign exchange)

3 Analysis of patent documentation and study of particular methods of determination of the following in raw materials and livestock feed:

1st quarter 1978

Report on present methods of determining vitamins, trace elements, calcium and phosphorus in raw materials and livestock feed

Mutual exchange of reports (grais)

a) Vitamins

TF

b) Trace elements, calcium and phosphorus

VNIIEP

4 Research to develop rapid methods of determining the following in raw materials and livestock feed:

1st quarter 1978-4th quarter 1978

Drafts of methods of rapid determination of vitamins, trace elements, calcium and phosphorus in raw materials and livestock feed

Mutual exchange of draft methods (grais)

a) Vitamins

TF

1	2	3	4	5	6	7
	b) Trace elements, calcium and phosphorus on an atomic absorption device	VNI IKP				
5	Writing of periodic reports	VNI IKP	TF	4th quarter 1978	Periodic reports	Mutual exchange of periodic reports (gratis)
6	Discussion of draft methods of rapid determination of vitamins, trace elements, calcium and phosphorus in raw materials and livestock feed and mutual agreement on them	VNI IKP	TF	4th quarter 1978	Mutual agreement on method of rapid determination of vitamins, trace elements, calcium and phosphorus in raw materials and livestock feed	Visit of 2 Soviet specialists to the SFRY for 10 days (reciprocal basis not involving foreign exchange)
7	Improvement of scientific methods for the sake of adoption of rapid methods of determination of the following in raw materials and livestock feed:					
	a) Vitamins	VNI IKP		1st quarter 1979		Visit of Soviet specialists to the SFRY for 15 days (reciprocal basis

not involving foreign exchange)

b) Trace elements, calcium and phosphorus on an atomic absorption device

1st quarter 1979

TF

Visit of 2 Yugoslav specialists to the USSR for 15 days (reciprocal basis not involving foreign exchange)

8 Verification under laboratory conditions in the USSR and the SFRY of rapid methods of determination of the following in raw materials and livestock feed:

VNI IKP

TF

1st quarter 1979

Official record of verification of application

Mutual exchange of records on verification of application

a) Vitamins

b) Trace elements, calcium and phosphorus on an atomic absorption device

9 Verification under production conditions in the USSR and the SFRY of rapid methods of determination of the following in

VNI IKP

TF

2d quarter 1979-3d quarter 1979

Records of verification under production conditions

Mutual exchange of records of verification under production conditions (gratis)

raw materials and livestock feed:

a) Vitamins

b) Trace elements, calcium and phosphorus on an atomic absorption device

10 Discussion of results obtained under production conditions with rapid methods of determining vitamins, trace elements, calcium and phosphorus in raw materials and livestock feed

3d quarter 1979

VNIKP TF

Proposal for introduction of rapid methods

Visit of 3 Yugoslav specialists to the USSR for 7 days

11 Drafting of recommendations for introduction in the USSR and the SFRY of rapid methods of determining the following in raw materials and livestock feed:

4th quarter 1979

Recommendations for introduction of rapid methods of determination of vitamins, calcium and phosphorus in raw materials and livestock feed

Mutual exchange of recommendations (gratis)

a) Vitamins

TF

1.	2	3	4	5	6	7
	b) Trace elements, calcium and phosphorus on an atomic absorption device	VNIIRP				
12	Discussion of recommendations for industrial application of rapid methods of determining vitamins, trace elements, calcium and phosphorus in raw materials and livestock feed in the USSR and the SFRY and mutual agreement on them. Discussion of the final results of the work on the topic, adoption of mutually acceptable solutions according to the results achieved in testing and study	VNIIRP	TF	4th quarter 1979	Mutual agreement on recommendations for industrial application of rapid methods of determining vitamins, trace elements, calcium and phosphorus in raw materials and livestock feed	Visit of 3 Soviet specialists to the SFRY for 7 days

The agreed equivalent for the travel of the specialists on a reciprocal basis not involving foreign exchange is 71 person-days.

Appendix No 15 to the Protocol of the Fourth Meeting of the Standing Yugoslav-Soviet Subcommittee
for Scientific-Technical Cooperation

Work Plan of Scientific-Technical Cooperation Between an Institute of the USSR Ministry of Communications and the Yugoslav Postal, Telegraph and Telephone Community on the Topic: Development of the Most Successful System for Technical Utilization of Coordinate Automatic Central Telephone Offices

No.	Title of Topic, Stage of Work	Participating Organizations		Completion Date	Form of Results	Organizational Measures, Conditions for Exchange of Results of Work
		USSR	SPRY			
1	2	3	4	5	6	7
	415-01 Development of the Most Successful System for Technical Utilization of Coordinate ATC [automatic central telephone offices] and Networks	Main Administration for Local Telephone Networks (GUTS)	Zajednica JPPT [Yugoslav Postal, Telephone and Telegraph Community]	1977 and 1978	Recommendations for improvement of the system of technical utilization of local coordinate ATC and networks	
		Lenin-grad Branch of the Scientific Research Institute				

of Com-
munica-
tions
(LONIIS)

Lenin-
grad
Municipal
Tele-
phone
Net-
work
(LGTS)

1 Preparation of
technical report
for organization
of a technical
maintenance center
in Belgrade and
for the telephone
communications
quality control
system

2d quarter
1978

Zajed-
nica
JPTT

Delivery of techni-
cal and operating
documentation

1.1 Preparation of
technical informa-
tion for organiza-
tion of a center
for technical
utilization of the
local telephone
network in Lenin-
grad and a service

2d quarter

LONIIS,
LGTS

Delivery of techni-
cal documentation

for technical maintenance of the subscriber system

1.2 Preparation of technical report for study and selection of methods and apparatus for creation of artificial loading and for gathering and processing of the results of statistical examination of the parameters of telephone traffic

Zajed-
nica
JPTT

3d quarter
1977

Technical report

Delivery of technical documentation

1.3 Definition of a method of technical utilization of coordinate ATC and networks and mutual agreement on this

GUTS, LONIS, LCTS
Zajed-
nica
JPTT

4th quarter
1977

First version of recommendations for methods of technical utilization of coordinate ATC and networks

Mutual exchange of materials. Visit of 5 Soviet specialists to the SFRJ on a reciprocal basis not involving foreign exchange

1.4 Determination and mutual adjustment of the makeup of monitoring and testing equipment for use in technical service centers in telephone

GUTS, LONIS, LCTS
Zajed-
nica
JPTT

1st quarter
1978

Makeup and principal technical characteristics of monitoring and testing equipment

Mutual exchange of materials. Visit of 5 Yugoslav specialists to the USSR on a reciprocal basis not involving foreign exchange

offices of the local telephone network of the USSR and the SFKY

1.5 Development of the basic principles of a successful system for technical utilization of coordinate ATC in local telephone networks and mutual agreement on this

GUTS, LONIIIS
Id quarter 1978
Zajed-nica JPTT
Basic principles of a successful system of technical utilization of coordinate ATC in local telephone networks

Mutual exchange of materials. Visit of 5 Yugoslav specialists to the USSR on a reciprocal basis not involving foreign exchange

2 1.6 Study of and mutual agreement on recommendations for improvement of the system of technical utilization of local coordinate ATC and networks and technical specifications for monitoring and testing equipment for telephone networks and equipment of technical service centers

GUTS, LONIIIS
Id quarter 1978
Zajed-nica JPTT
Recommendations for improvement of the system of technical utilization of local coordinate ATC and networks. Technical conditions for monitoring and testing equipment for telephone networks and equipment of technical service centers

Mutual exchange of materials. Visit of 5 Soviet specialists to the SFKY on a reciprocal basis not involving foreign exchange

Appendix No 16 to the Protocol of the Fourth Meeting of the Standing Yugoslav-Soviet Subcommittee
for Scientific-Technical Cooperation

Work Plan of Scientific-Technical Cooperation Between Institutes of the USSR Ministry of Communications and the Yugoslav Postal, Telegraph and Telephone Community on the Topic: Development of Principles and Technical Solutions for Use of Semielectronic Local and Intercity ATC

No	Title of Topic, Stage of Work	Participating Organizations		Completion Date	Form of Results	Organizational Measures, Conditions for Exchange of Results of Work
		USSR	SPRY			
1	2	3	4	5	6	7
1	416-01 Development of principles and technical solutions for use of semielectronic local and intercity ATC and ATC [automatic intercity central telephone office]	GUMTS Main Administration for Line-Cable and Radio-Relay Installations (GUMTS) Central Scientific Research Institute of Com-	Zajednica JPTT	1977 and 1978	Basic principles of systems for technical use of semielectronic local and intercity ATC	

Communications
(TsNIIS)

LONIIS

1.1 Drafting the first version of the basic principles of the system for technical use of semielectronic and intercity ATC

CNIIS, Zayed-nica JPTT
LONIIS

4th quarter 1977

First version of basic principles of the system for technical use of semielectronic local and intercity ATC

Mutual exchange of materials

1.2 Drafting the second version of the basic principles of the system for technical use of semielectronic and intercity ATC

CNIIS, Zayed-nica JPTT
LONIIS

2d quarter 1978

Second version of basic principles of the system for technical use of semielectronic local and intercity ATC

Mutual exchange of materials

1.3 Study of remarks and mutual agreement on basic principles of the system for technical use of semielectronic ATC

CUMTS, Zayed-nica JPTT
GUTS, LONIIS, CNIIS

2d quarter 1978

Basic principles of the system for technical use of semielectronic ATC

Visit of 5 specialists to the SFRY on a reciprocal basis not involving foreign exchange

1.4 Study of remarks and mutual agreement on basic principles of the system for

CUMTS, Zayed-nica JPTT
GUTS, LONIIS, CNIIS

4th quarter 1978

Basic principles of the system for technical use of semielectronic intercity ATC

Visit of 5 Yugoslav specialists to the USSR on a reciprocal basis not involving foreign exchange

technical use of
electronic inter-
city ATC

Appendix No 17 to the Protocol of the Fourth Meeting of the Standing Yugoslav-Soviet Subcommittee
for Scientific-Technical Cooperation

Work Plan of Scientific-Technical Cooperation Between the All-Union Association Elektrozagran-
postavka (EzP) of the USSR Ministry of Power and Electrification and the Factory Iskra of Yugosla-
via (Ljubljana) on the Topic: Development of Telephones With Touch Dialing and Memory

No	Title of Topic	Participating Organizations		Date of Commence- ment and Completion of Work (year; quarter)	Form of Results	Organizational Meas- ures. Conditions for Delivery of Re- sults (paid-gratis)
		USSR	SFRJ			
1	417-01 Topic: De- velopment of Tele- phones With Touch Dialing and Memory	EZP, MEP	Factory Iskra, Lju- bljana	1977 and 1978	1. Drawings, elec- tric circuits 2. Samples of tele- phones 3. Record of testing 4. Agreed recommen- dations for orga- nizing production of telephones	
1	Determination of the general technical specifications and norms of parameters of telephones	EZP, MEP	Factory Iskra	2d quarter 1977	Agreed technical specifications	Visit of 2 Yugoslav specialists to the USSR for 4 days at the Yugoslav

1	2	3	4	5	6	7
						factory's expense (done)
2	Development and de-termination of functional capabilities of the telephone, charts and functional electric circuits of the parts of the telephone:	EZP, MEP	Factory Iskra	2d quarter 1977	Finished drawings and functional electric circuits	
	a) Design of the electric circuit, touch system, memory, and unit for programming output electric parameters	EZP, MEP		2d quarter 1977	Drawings, circuit diagram	Delivery to the Yugoslav partner (gratis)
	b) Preparation of the electric circuit of the transmitter of the telephone, outside-dimension drawings (parts and components) of the telephone case		Factory Iskra	2d quarter 1977, May	Drawings, circuit diagrams. Records of the agreement concerning functional capabilities. Prepared drawings and electric circuit diagrams	Delivery to the Soviet partner (gratis). Visit of 3 Yugoslav specialists to the USSR for 5 days at the expense of the Yugoslav partner (done)
3	Preparation of technical documentation and manufacture of	EZP, MEP	Factory Iskra	June	Technical documentation and samples	

1	2	3	4	5	6	7
	parts for assembly of samples of the telephone:					
	a) Electronic portion of the touch system, memory, touch system	EZP, MEP			Samples	
	b) Plate of the transmitter of the telephone and parts of the case of the telephone		Factory Iskra		Samples	Delivery of 8 sets to the Soviet partner (gratis--done)
4	Assembly of samples of telephones with touch system	EZP, MEP		3d quarter 1977		Delivery of 4 complete telephones to the Soviet partner for testing (gratis--done)
5	Joint testing of samples and agreement on design	EZP, MEP	Factory Iskra	July	Record of testing and recommendations for adjustment of design	Visit of 3 Yugoslav specialists to the USSR for 5 days at the expense of the Yugoslav partner (done)
6	Manufacture of parts and components of the telephones:	EZP, MEP	Factory Iskra	3d quarter 1977	Parts	
	a) Touch system, memory and ringing device	EZP, MEP		3d quarter 1977	Parts	Delivery of 100 sets to the Yugoslav partner (gratis)

1	2	3	4	5	6	7
	b) Speech portion and housing of the telephone		Factory Iskra	3d quarter 1977	Parts	Delivery of 300 sets to the Soviet partner (gratis)
7	Manufacture of an experimental series of telephones with touch dialing to meet testing and operating conditions in the USSR and the SFRY	EZP, MEP	Factory Iskra	3d quarter 1977	Experimental series	
8	Joint testing of the experimental series of telephones	EZP, MEP	Factory Iskra	4th quarter 1977	Record of testing	Visit of 5 Soviet specialists to the SFRY for 6 days (gratis)
9	Correction of technical documentation on the basis of results of joint tests of the trial series of telephones:	EZP, MEP	Factory Iskra	4th quarter 1977	Corrected technical documentation	
	a) Documentation on housing and the speech portion of the telephone		Factory Iskra	4th quarter 1977	Drawings, basic diagrams	Delivery of drawings and circuit diagrams to the Soviet partner (gratis)
	b) Documentation on the touch system, memory and ringing device	EZP, MEP		4th quarter 1977	Drawings, basic diagrams	Delivery of drawings and electric circuits to the Yugoslav partner (gratis)

<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>
10	Mutual agreement on technical documentation for connection of the experimental series of telephones	EZP, MEP	Factory Iskra	4th quarter 1977	Agreed technical documentation	Visit of 5 Yugoslav specialists to the USSR for 6 days (gratis)
11	Preparation of technical specifications and methods of testing the telephone:	EZP, MEP	Factory Iskra	1st quarter 1977	Technical conditions and testing methods	
	a) Technical specifications and methods of testing the speech portion of the telephone		Factory Iskra	1st quarter 1978	Technical conditions. Testing methods	Delivery of technical specifications and testing methods to the Soviet partner (gratis)
	b) Technical specifications and methods of testing the touch system, memory and ringing device	EZP, MEP		1st quarter 1978	Technical conditions. Testing methods	Delivery of technical specifications and testing methods to the Yugoslav partner (gratis)
12	Determination of the technical specifications and testing methods of the telephone	EZP, MEP	Factory Iskra	1st quarter 1978	Final technical specification and testing methods	Visit of 3 Soviet specialists to the SFRY for 6 days (gratis)

1	2	3	4	5	6	7
13	Preparation of the structural and functional diagrams of telephones with dialing, etc.	EZP, MEP	Factory Iskra	1st quarter 1978	Structural and functional diagrams	Visit of Yugoslav specialists to the USSR for 6 days (gratis)
14	Manufacture of components for the experimental series of telephones according to the adjusted technical documentation and the agreed specifications:	EZP, MEP	Factory Iskra	2d quarter 1978	Components	
	a) Speech portion and housing of the telephone		Factory Iskra	2d quarter 1978	Components	Delivery of an experimental series of 400 sets to the Soviet partner (gratis)
	b) Touch system, memory and ringing device	EZP, MEP	Factory Iskra	3d quarter 1978	Components	Delivery of an experimental series of 110 sets of components to the Yugoslav partner (gratis)
15	Method of testing the experimental series of telephones	EZP, MEP	Factory Iskra	3d quarter 1978	Experimental series of telephones. Records of tests	Visit of 4 Soviet specialists to the SFRY for 8 days (gratis). Delivery of telephones to the Soviet partner,

10 sets made up from the components referred to in Point 14b (gratis)

16 Manufacture of an experimental series of telephones with dialing:

a) Housing and components of the speech portion of the telephone

Factory Iskra

Components

Delivery of experimental series of 5 sets to the Soviet partner (gratis)

b) Touch system, ringing device, memory and dial

EZP, MEP

4th quarter 1978

Components

Delivery of an experimental series of 5 sets to the Yugoslav partner (gratis)

17 Method of testing the experimental series of telephones with touch system and dialing

EZP, MEP

Factory Iskra

Record of testing

Visit of 4 Soviet specialists to the SFRY for 3 days (gratis). Delivery of 3 sets from the experimental series to the Soviet partner (gratis)

18 Final results of the work for 1978. Drawing up of overall account, preparation of

EZP, MEP

Factory Iskra

Report, account, recommendations

Visit of 6 Yugoslav specialists to the USSR for 6 days (gratis)

recommendations for
organization of
production of the
touch telephone

The agreed equivalent for visits of specialists on a reciprocal basis not involving foreign exchange is 30 specialist-days for 1977 and 66 specialist-days for 1978.

Appendix No 18 to the Protocol of the Fourth Meeting of the Standing Yugoslav-Soviet Subcommittee
for Scientific-Technical Cooperation

Work Plan of Scientific-Technical Cooperation Between the Yugoslav Construction Center (JCC) and the Central Institute for Scientific Information in the Construction Industry and Architecture (TsINIS) of USSR Gosstroy on the Topic: Improvement of the Forms and Methods of Scientific-Technical Information in the Construction Industry

No	Type of Cooperation	Participating Organizations		Date of Commence- ment and Completion of Work (year, quarter)	Final Result of Cooperation	Organizational Measures; Conditions for Delivery of Results (paid-gratis)
		SPRY	USSR			
1	418-01 Improvement of the Forms and Methods of Scientific-Technical Information in the Construction Industry	3	4	5	6	7
	JCC	TsINIS	of Gos- stroy	1978 and 1979	1. Mutual agreement on proposal for improving forms and methods and on a method of obtaining information in the construction industry	

1	2	3	4	5	6	7
	Purpose of the cooperation: increasing the effectiveness of information services to consumers of scientific-technical information in the SFRY and the USSR				2. Recommendations for broader and deeper mutual cooperation of the national scientific-technical information systems in the SFRY and the USSR	
1	Familiarization with application of methods of gathering and processing data and also methods of rendering information services to consumers and to the construction industry in the SFRY and the USSR	JGC	TsINIS	1st-3d quarters 1978	Informative survey with proposals and methods concerning the gathering and processing of data and their improvements	Mutual delivery of material prepared (gratis)
2	Compilation of and mutual agreement on a list of the material exchanged, which represents the first attempt in the SFRY and the USSR and in other technically advanced countries	JGC	TsINIS	1st-3d quarters 1978	Mutual agreement on the list of information materials exchanged	Visit of 3 Soviet specialists to the SFRY for 7 days in 3d quarter of 1978 on a reciprocal basis not involving foreign exchange

1	2	3	4	5	6	7
3	Joint resolution of problems related to furnishing linguistic elements in the Serbo-Croatian and Russian languages:	JGC	TsINIS	3d and 4th quarters 1978	Final list and technical expressions and glossaries for the construction industry in Russian and equivalents in the Serbo-Croatian language to be jointly worked on	Delivery to the Yugoslav side of the draft of the "List." Visit of 3 Yugoslav specialists to the USSR for 7 days in the 4th quarter of 1978 on a reciprocal basis not involving foreign exchange
	Development of and mutual agreement on linguistic equivalents (in meaning) of the expressions on the final agreed list	JGC	TsINIS	1st-3d quarters 1979	Agreed linguistic equivalents (in meaning) of the technical expressions and glossaries according to the final and agreed list	Visit of 3 Yugoslav specialists to the USSR for 7 days in the 3d quarter of 1979 on a reciprocal basis not involving foreign exchange
4	Development of and agreement on methods and forms of information services, principal categories of information	JGC	TsINIS	4th quarter 1978-4th quarter 1979	Agreed proposals for improvement of forms and methods of services to information consumers in the construction industry along with	Visit of 3 Soviet specialists to the SPRY for 7 days in the 4th quarter of 1979 on a reciprocal basis not involving foreign exchange

consumers in the construction industry, and use for that purpose of the mutually exchanged information material prepared on the principle of international division of labor

recommendations for broader and deeper mutual linkage between the national scientific-technical systems of the SFRY and the USSR

The agreed equivalent for visits of specialists on a reciprocal basis not involving foreign exchange is 21 person-days each year.

Appendix No 19 to the Protocol of the Fourth Meeting of the Standing Yugoslav-Soviet Subcommittee for Scientific-Technical Cooperation

Work Plan of Scientific-Technical Cooperation of the All-Union Scientific Research and Project Planning and Design Institute of Polymer Building Materials (VNIISTROYPOLIMER, Moscow) With the Trade Association Izma (SFRY) on the Topic: Study of the Influence of the Composition and Depth of the Liquid (Melted) Layer on the Life of Roofing and Waterproofing Materials

No	Project Title	Participating Organizations		Date of Commencement and Completion of Work (year, quarter)	Form of Results	Organizational Measures. Conditions for Delivery of Results of Work (paid-gratis)
		USSR	SFRY			
1	2	3	4	5	6	7
419-01	Topic: Study of the Influence of the Composition and Depth of	VNIISTROYPOLIMER	Izma Trade polimer;	2d quarter 1977-4th quarter 1978	Joint proposals of optimum depth of the liquid layer	

1	2	3	4	5	6	7
	the Liquid (Melted) Layer on the Life of Roofing and Waterproofing Materials	Specialized Trust No 38, Lenin-grad	Association		and of the design of the roofing	
1	Drafting of and mutual agreement on research program	VNIInstroy-polimer; Specialized Trust No 38, Lenin-grad	Izma	June 1977	Agreed research program	Visit of 3 Yugoslav specialists to the USSR for 5 days (at the expense of the Yugoslav side)
2	Preparation of report on composition and properties of materials of the liquid type (poured on) developed in the SFRY and the USSR	VNIInstroy-polimer	Izma	June 1977	Information on the composition and properties of materials of the liquid type	Mutual communication of information (gratis)
3	Selection of testing methodology	VNIInstroy-polimer; Specialized	Izma	June 1977	Agreement on methodology	Visit of 3 Soviet specialists to the SFRY for 7 days (reciprocal basis not involving foreign exchange)

1	2	3	4	5	6	7
		Trust No 38, Lenin- grad				
4	Determination of the optimum depth of the liquid layer preventing destruction of the base of USSR roofing	VNIInstroy-polimer; Specialized Trust No 38		2d and 3d quarters 1977	Report on proposals for selection of optimum depth of the liquid layer	Delivery of documentation to the Yugoslav side
5	Determination of the optimum depth of the liquid layer preventing destruction of the base of SFRY roofing		Izma	2d and 3d quarters 1977	Proposals for optimum depth of the liquid layer	Delivery of technical documentation to the Soviet side (gratis)
6	Study of the research results in connection with selection of the depth of the liquid layer which can be applied to roofing in the USSR and the SFRY	VNIInstroy-polimer	Izma	September 1977	Protocol and proposals for selection of optimum depth of the liquid layer	Visit of 2 Yugoslav specialists to the USSR for 11 days (equivalent basis not involving foreign exchange)
7	Selection of optimum design of roofing as a function of					

1	2	3	4	5	6	7
	various climatic conditions where the material is being used:					
	Southern regions and regions with humid coastal climate		Izma	4th quarter 1977-3d quarter 1978	Proposals for optimum design of roofing	Delivery of documentation (technical) to the Soviet side (gratis)
	Northern regions and regions with average moderate climate	VNIInstroy-polymer		4th quarter 1977-3d quarter 1978	Proposals for optimum design of roofing	Delivery of documentation (technical) to the Yugoslav side (gratis)
8	Study of proposals for optimum design of roofing	VNIInstroy-polymer	Izma	3d quarter 1978	Agreement on proposals for optimum design of roofing	Visit of 3 Soviet specialists to the SFRY for 7 days (reciprocal basis not involving foreign exchange)
9	Writing of joint report on the topic	VNIInstroy-polymer	Izma	4th quarter 1978	Joint report on proposals for optimum depth of the liquid layer and design of the roofing	Visit of 2 Yugoslav specialists to the USSR for 10 days (reciprocal basis not involving foreign exchange)

SITUATION IN MINING, PROCESSING INDUSTRIES REVIEWED

Tirana ZERI I POPULLIT in Albanian 15 Nov 79 p 3

[Article by Eshref Pumo, dean of the faculty of mines and geology of Tirana University: "The Frontal Development of the Extraction Industry--the Frontal Development of the Processing Industry"]

[Text] During the 35-year period, in geological research work and in the extraction industry, important successes were achieved in the knowledge of geology of the country and in the processing, discovering and exploitation of useful mineral ores, at rapid rates. The continuous increase of reserves of petroleum, gas, chromium, copper, ferronickel, coal and so forth, have provided conditions for the opening and exploitation of mines, thus, making a contribution to the setting up and development of the multibranch industry, the progress and rapid intensification of agriculture and the strengthening of the defense capacity of the country.

To achieve these victories, the party had to wage a decisive struggle against the points of view, aims and acts of sabotage of the "Soviet specialists" and of others who used to misrepresent the geological data by presenting our country as a country poor in mineral resources. In addition, the Yugoslav and Soviet revisionists and the Chinese revisionists have tried with all their means to have our country remain simply a producer of raw materials for them. This was also the aim of their acts of sabotage in connection with the construction of the projects of the processing industry. The party understood in time and defeated this typical colonial policy. The party, from the first days of the liberation, devoted a particular attention to the domestic processing of natural resources along with the extraction of these resources. This policy has played a decisive role in the building of socialism, implementing the principle of relying on one's own forces.

Petroleum and gas are among the most important riches needed by our economy. It was in the struggle against the efforts and points of view of the foreign and domestic enemies that important mineral-rich areas of petroleum and gas were discovered near the existing ones and new fields of petroleum and gas were also found; on the basis of these discoveries, plants for the processing of raw petroleum were built in the country. The first refineries in Stalin

City, Cerrik and Fier were made richer with the great deep petroleum processing plant in Ballsh, where combustible and lubricant materials of great quantities will be produced for the need of the country and for export, thus, contributing to the general development of the chemical industry, especially petrochemistry.

Our country is rich in chrome and copper mineral ores which are of great importance for industry and export. The copper reserves have been increased from one decade to the other. Contrary to the opinion of the foreign specialists, new mineral-rich areas of copper have been discovered and the prospects for this very useful ore have been better clarified.

Some years ago, we used to export copper ores processed as blister copper, while after the construction of the copper refinery in Rubik and the wire plant in Shkoder, we managed to process copper ores in a complete cycle and, presently, we extract products prepared in the form of wires, cables and so forth, which are needed by the economy of our country and which are in demand on the foreign market. The building of the pyrometallurgy plant in Lac provides the possibility, along with the production of blister copper and refined copper, to extract copper sulfate and sulfuric acid, which play a special role in guaranteeing high yields in agriculture and in intensifying it. The putting into operation of these plants, as well as the construction of plants for the enrichment of copper ores, also made it possible to exploit the poor mineral ores, thus, increasing the contribution of this metal to the industrial development of the country. The task of our geologists is to study and learn more about the copper-containing capacity of our country, because the possibilities for finding this mineral ore are great, while the task of enrichers and technologists is to find new ways for the enrichment and complex processing of mineral-rich areas of different types.

The intensification of research-discovery works in the ultra-base masses led to the discovery of new mineral-rich areas of chrome and to a more complete conception of the structural construction of the mineral-rich areas, which was influential in increasing the chrome reserves and its prospects. These results made it possible to increase production. Today our country holds the third place in the world in regard to the production of chrome.

The processing of chrome ores is more difficult. The construction and putting into operation of the first ferrochromium plant in Burrel marked a new stage in the chrome industry, because the projects of this plant, the expansion of its capacity and the construction of other plants of this type in the future, on the basis of our chromes suitable for metallurgy, will create the opportunity to carry out the exploitation of chromium reserves more sparingly, providing greater money revenues since the ferrochromium value is several times higher than that of raw chromium.

Our country is rich in ferronickel and silicate-nickel minerals. As a result of the research-discovery works carried out in recent years, important reserves have been discovered that make it possible for our country to be ranked among the major nickel producing countries.

A great struggle had to be waged and serious "obstacles" had to be overcome before our country could build the giant of our metallurgy, the "Steel of the Party" metallurgical combine. For the ferronickel minerals, just as for the other useful minerals, the party had to defeat the efforts of the foreign and domestic enemies who, through various forms and ways and with many "pretexts" and "arguments," tried to obstruct the building of the ferrous metallurgy plant in our country. However, under the leadership of the party and contrary to the dreams and desires of our enemies, the first stage of the combine was successfully completed and work is being carried out with determination so as to put it into operation with full capacity. In addition to nickel and cobalt, which are so much in demand, the combine will produce cast-iron and steel of great quality for the people's economy. Along with petroleum and gas, chromium and copper ores and so forth, the blockade is also being broken in regard to nickel. The present achievements of the working collectives of the "Steel of the Party" combine and the experience amassed on this occasion are of a particular importance because of the fact that they illuminate the path for the clarification of the technology of silicate-nickel ores, in regard to which study and experimental works have now begun for the extraction of ferronickel ores; they will encourage the beginning of technological studies for the complex exploitation of other ferronickel and silicate-nickel minerals of the country. This will make it possible for our country to have an important place in the production of nickel in Europe, which is so desirous of this metal, and to compete with dignity in world markets.

Those are some of the main minerals, but not all of them, which are being fully processed or which being exploited in complete cycle. From a country with very small reserves of coal we have discovered many sources that have been influential in increasing coal extraction... Important steps have also been made in this field. The construction of enrichment plants near the mines of Memaliaj, Valia and others is making it possible to greatly improve the value of coal, providing more calories, higher quality of burning and greater use of coal. We have established the cement industry which is rapidly developing based on raw materials found in colossal quantities in our country. Good results have been achieved in the extraction of petroleum by-products from bituminous sands and so forth.

All these achievements affirm the correctness of the political and economic policy pursued by the party in the building of socialism with our own forces. These successes also are a support and guaranty in further expanding the processing of useful mineral ores in the country. Speaking at the Seventh Party Congress, Comrade Enver Hoxha emphasized that in 1980 it will be possible that more than 65 percent of the volume of exports will be made of goods processed in the country, compared to 46 percent in 1960. And this is being achieved. In the future we will make other great steps toward the further growth of the processing industry.

Along with the increase perfection of the technological and refining processes of most useful minerals, other useful minerals, needed by our industry and agriculture, have been put in motion. The reserves of phosphorites and bauxites have been provided and are being further increased; in this connection,

studies have begun to find the ways for their technological processing. There are colossal reserves of gypsum, which must be better evaluated in connection with their utilization both as building material for domestic use and for export. Time has come to undertake studies to find the ways for the complete polishing of marbles and decorative stones in order to move gradually to the marketing of ready made pieces and not of unpolished blocks as is being done today. This dictates the need for a radical perfection of the technology which, presently, is in the stage of elementary assimilation. The rapid development of metallurgy creates favorable conditions for the production of marbles which, in these past years, have drawn the attention and interest of world science. We must progress more rapidly in the study of the technology of asbestos minerals, of clayey rocks, of quartz and so forth.

The increase of the range and volume of the extraction of useful minerals creates opportunities for the further development of the chemical industry. This is the newest industry in our country; it will help the production of new articles needed by the new branches of industry and the many-sided progress of industry, agriculture and defense. The studies in the field of the enrichment of industrial chemistry and of metallurgy, better enlightened by complete spectral-chemical and mineralogical studies, will help find new ways for the complete processing of the raw mineral material, so that even the "scraps" of the casting and refining processes today will be subjects of studies, adhering to the principle that the entire mass of the rock will be placed in the use of industry.

A distinctive characteristic of the processing of useful minerals in the country is the fact that it dictates, as a necessity, the prospecting and exploitation of useful minerals which, on first examination, attract our attention less, therefore, it draws attention to new minerals, thus, expanding the range of research, of evaluation and of complex and deep processing of underground resources.

Thus, for example, we might mention the use of dolomites of the country for the lining of electric furnaces of the metallurgical combine by replacing imported magnesites and so forth. The processing of underground resources in the country is a chain process, opening prospects and horizons for new industrial branches and providing new stimuli for the mining industry and for geological research works. Thus, geological research work, exploitation of mineral resources and their processing in the country constitute the objective unity that the party created, built and developed at an unprecedented pace and with particular concern, placing it at the foundation of the multibranch industry successfully built during these 35 years of the people's government.

Making the balance-sheet of achievements in the field of geology, exploitation and processing of mineral resources, we observe that the frontal development of the processing industry--the guaranty for the building of socialism with our own forces and for an uninterrupted development of the country's economy at a time when the imperialist and revisionist world is caught in the grip of the greatest economic crisis, so far. Therefore, the intensive exploitation, expansion and uninterrupted invigoration of the processing industry will contribute to the further defeat of the blockade and encirclement and to the continued strengthening of the independence of our socialist fatherland.

SURVEY OF ENERGY PROBLEMS, INEPT REGULATIONS

Energy Saving

Sofia STURSHEL in Bulgarian 9 Nov 79 p 1

[Text] Energy must be saved! Furthermore, energy must be loved, for it means warmth, motion, progress, development. . . .

Much is being said of late on saving of energy. However, is energy saved everywhere the way it should be? It turns out that many people rely on the physical law which claims that, actually, energy is not lost but only converts from one state to another. It may be kinetic or potential. . .

What do those who rely on this scientific claim do?

For example, they are building a residential complex of 10,000 apartment units without chimneys since the plan calls for receiving their heat from a thermoelectric plant. . . . For some reason, however, the plant is to be built 10 years after the apartments. For the time being, those who live there could have only electric heat. . . . These are thousands of kilowatt hours wasted, simply because some service has considered this problem not like a statesman but from the departmental viewpoint!

Or else, thousands of cubic meters of natural gas may be burned. . .for nothing, since no one has planned where to utilize it, how to utilize it, and how to transport it. . . .

Or else the production process is planned in such a way that, suddenly, in the very whirl of the energy crisis, it would leave the country for years on end with zero production of heat storing stoves. . . .

Or else. . . .

Or else. . . .

A number of examples could be cited. Following are some of them in the materials published under the overall title of "Are We Energetically Saving Energy?"

What matters, however, is only that energy should be saved. It should be saved not in words but in deeds. In economics matters are rather different from the optimistic conclusion of the physicists according to which energy merely converts from one state to another. . . . Energy is melting away. It turns into smoke. It is unforgivable to waste it because of poor planning, poor production, lack of foresight, departmental interests, or simply as a result of oriental carelessness. . . .

Energy Conservation Means

Sofia STURSHEL in Bulgarian 9 Nov 79 p 1

[Article by D. Begunov]

[Text] Compared with the number of people like Napoleon, Balzac, Dostoyevskiy, and Rembrandt, there are few people who have undertaken to develop a perpetual motion machine. We could even say that their number is entirely minimal.

This, however, is alarming. It indicates that in our country very little thought is being given to the problem of energy. If, nevertheless, some thought is given to it, it does not go beyond pressing a button, turning a switch, or lighting the stove.

True, we have reached world standards in the conversion of low caloric coal into electric power. Yet, what is the use of this if it is even truer that we have reached world standards also in terms of the ineffectiveness of the utilization of produced electric power.

This means that one eliminates the other.

Electric power is being used for heating even in districts in the immediate vicinity of electric power plants, even though, meanwhile, a student would get a failing mark for not knowing that steam is far less expensive as heat energy. However, even an "F" apparently, frightens no one, because for decades the pipes and steam radiators of residential buildings are collecting dust.

Let us also merely point out that as the result of the nonutilization of the full power coefficient in the burning of fuel oil for steam boilers in various enterprises, over 6,000 tons of fuel are lost annually, and so on.

This happens from the top to the bottom.

What happens from the bottom upwards?

We are a southern country and spend nearly half the year avoiding the heat. However, even when we turn on the switch for hot water for household needs, or for taking a bath, few are those who think of heating water through solar heat. Yet, those same people in turn, do not think of painting their water barrel black so that it could heat better. Why would they think of it if not even specialists in the matter are giving it a thought. They should have long developed a household system for the purpose, scientifically designed, most effective, and even entirely made of plastic.

Let us not even mention the fact that a specially shaped black hose of adequate length, coiled on the roof or anywhere under the sun could steadily provide us with an adequate amount of hot water.

It is likely that someone, with his modest possibilities, is attempting to discover some new kind of America in the field of energetics. One million households, multiplied by God knows how many kilowatt hours, would be the equivalent of such an America.

Here is another example:

Capital A is working in the neighboring city B and his greatest dream is to commute with his bicycle. However, thousands of four-wheeled monsters, surrounded by a bluish flame, are roaring on the road, and a person could be easily killed, both spiritually and physically. That is why A and, with him, tens of thousands of others, are dreaming dearly of a modest asphalted lane. No more than this. This would save on fuel and environmental pollution, and so on, and so forth.

Energy savings could pile up from a number of places but we must roll up our sleeves. It may be easier to lower the percentage of consumers. However, turning off a light where needed may later cost as much energy as that of tens and hundreds of thousands of bulbs, or almost as much as a huge machine unit which may burn out quickly. All it would take would be a few empty revolutions per minute.

That is why Einstein's famous energy formula $E = mc^2$ should be converted into the following Bulgarian formula:

Energy equals the tons of fuel multiplied by the square of conscience (or knowledge).

This would apply for the time being, at least.

The other salvation would be the discovery of huge and inexhaustible oil deposits, near Gorublyane, for example, something we consider doubtful.

Senseless Rules Criticized

Sofia STURSHEL in Bulgarian 9 Nov 79 p 1

[Article by Lyubomir Yanov]

[Text] The establishment of a ceiling for electric power has triggered a large number of letters to the editor containing many just claims. This called for a review of some basic stipulations. Consequently, on 15 August, the Electric and Heat Power Supply Directorate of the Ministry of Power Supply issued Letter No 90-3-386 which properly solved a number of problems. Despite this, the flood of letters continued. Why? We looked closely at the document and looking at its grotesque side, we offer to you the following logical cock-and-bull stories.

The Soldier

At the entrance of an army unit the father has spread out the food parcel. The son, a soldier, is gobbling up the home-made pie. The father is looking at him with love and pain. Finally, he rallies his strength, and says:

"Son, you will be discharged in about 10 days. Your mother and I have long dreamed for you to come back to the village and go back to the tractor. Pesho, the brigade leader, keeps asking after you. However, son, it would not be a bad idea to reenlist."

"Why, father?" says the young soldier choking on his food.

"Because, at home, there will be no allocation for electric power for you, since according to the letter, 'a soldier returning home from military service is not considered a legitimate reason for raising the limit.'"

The Student

Room in a student hostel. Graduating student Milka, reading a letter from her parents: "Dear daughter, we are very proud of your success. Your excellent grades are the best reward for our concern. In five days you will graduate and come back to us. However, daughter, if you come back there would be no ceiling for you. See, if you can, to repeat the year until this problem is settled, for, 'the return of a son (daughter)

from school is not considered a legitimate reason for raising the ceiling additionally. . . ."

The Grandson

The white Lada has stopped in front of a neat village house. Before the grandparents have even opened the door, the mischievous grandson has already thrown himself in the arms of the loving mother. "Mother, Daddy, finally, you are here. You can now take me back and I will go to school."

"No, my son," sadly says the father, nodding his head. "We came to tell you that this year again you will remain in the village, for if you come back the limit will not be raised for you, since 'a child who has lived with his grandparents and is coming back home to go to school may not be considered a legitimate reason for an additional ceiling.'"

The Patient

A doctor's office in the city polyclinic. With a familiar gesture the doctor removes the stethoscope, looks at the patient and, after a brief silence says:

"Look, Peter, let us be frank. You are in poor shape. If you want to regain all your health you should enter the hospital for at least two months."

"Please, doctor, anything but this, since when I go home I would be unable to turn on my stove and will catch another cold, since. . . should a member of the family have been hospitalized for two to three months the ceiling may not be raised."

The Fiancee

Family evening. The father and the mother are asking when will their son marry. The wine is ready and the pig is waiting. The son answers:

"Only after Siyka has given birth. Otherwise we would find it difficult to live in a dark room without heat, for 'the marriage of a son or daughter may not be considered a legitimate reason for raising the ceiling before a child is born.'"

Logic indicates that, indeed, the most suitable day to get married is the day when the bride is scheduled to enter the maternity hospital. Perhaps, however, a slightly simpler solution may be found. Let supplementary letter No 90-3-386 be reviewed yet once again and such confusions be avoided. Let a new letter be circulated to put an end to the flood of letters sent by the citizens to editors, obshtina councils, or state institutions.

Author's note. All quotes in the article are literally cited from letter No 90-3-356 of the Electric and Thermal Power Supply Directorate of the Ministry of Power Industry.

Electric Power Allocations Criticized

Sofia STURSHEL in Bulgarian 9 Nov 79 p 1, 3

[Article by Sergey Traykov]

[Text] Starting with 1 January 1978 the Ministry of Power Supply issued a power ceiling to the enterprises. This meant that in producing a specific part a plant will not use as much electric power as it wishes but only as much as is necessary. The production of this part will take place not after the worker has finished his cigarette or his conversation on soccer games but on the basis of a precisely specified schedule which, naturally, calls for conversation as well but only during the lunch break.

However, it turns out that the people have become accustomed to working differently. And habit is something difficult to remove. Let us look at a few cases which occurred in the first nine months of this year.

After setting limits for the use of electric power by the individual enterprises, a number of complaints were received by the Ministry of Power supply calling for their amendment. No single enterprise complained that its ceiling exceeded its requirements. Everyone wanted more. It turned out that some of them wanted simply to have power at their disposal. Such was the case, for example, of the Devnya SKhK [Economic Chemical Combine] whose managers insisted on having a higher power allocation and were subsequently unable to reach the granted level.

Unlike them, however, other enterprises boldly exceed their ceiling at times of peak loads of the electric power system, for which they pay penalties of five times the regular rate. Such are the Khimik Plant in Asenovgrad, which exceeded its ceiling by 30,720 kilowatt hours, Oranzheriyni Zelenchutsi, in Purvomay, by 38,480 kilowatt hours, and Elpromenergo, Elektrometal, and the Kliment Voroshilov low tension appliances plant, all in Sofia. Heavy fines have also been paid by the Electric Power Supply Economic Combine in Pleven, whose personnel fined 26 enterprises.

This is not the complete picture of the violators, for the Minister of Power Supply does not as yet have the necessary number of triple rate electric meters to be able to determine precisely the amount of power used. The remaining 6,000 electric meters will be imported before the end of the year and violations will be determined precisely. However, this would hardly resolve the question of the proper use of allocated amounts.

Still by force of habit, precisely during peak load times, factories, plants, and garages turn on their boilers, electric heaters, and their welding equipment in their auxiliary facilities. These are all activities which could be carried out at other periods of the day. However, this again is the result of habits which could be broken. However, there is an old trouble which creates a conflict in the enterprises in terms of such ceilings: rushing to complete the plan. At the beginning of each month, quarter, or half-year the work is calm and the load is lesser. Toward the end all capacities are used on a shock basis and the limits yield to quintuple fines. The "champions" in this respect are, mainly, the enterprises of the Ministry of Metallurgy, Ministry of Chemical Industry, Ministry of Forests and Forest Industry and Ministry of Machine Building. The most important thing to be done, however, is reconstruction and modernization by applying in each plant equipment described as consumer-regulator buffer. It is precisely this system that could resolve a number of problems, for such a regulator would balance the use of electric power and, precisely at peak load times, will save on so much needed electric power. However, since such regulators are quite expensive, said ministries must include in their programs for the Eighth Five-Year Plan such reconstruction and modernization so that funds may be appropriated on time.

For quite some time we have been saying that we know how to waste the electric power we need so much. The time has come now to prove that we can save it as well.

Inadequate Coal Deliveries

Sofia STURSHEL in Bulgarian 9 Nov 79 p 3

[Article by Zornitsa Petkova and Nikolay Cheshmedzhiev]

[Text] Nature has kindly resolved that six months of free solar heat are sufficient for our native moderate climate. The other half of the year was given to the respective departments so that they may make promises. And, they do.

Thus, for example, the country's mines promised to mine solid fuel (coal and briquettes) in amounts sufficient for the entire country. In turn, the warehouses have promised to sell to the citizens all they get. The transport system pledged to promptly allocate the necessary number of freight cars to haul the coal. Also promised are over 20,000 coal burning furnaces and 13,000 heat-storing furnaces.

All this is very nice and a person may even feel warm as he listens to it or reads it.

Actually, let us see whether or not the situation is so optimistic.

First of all, could coal be purchased in a warehouse routinely and without waiting in line? This may be the case elsewhere but not in Sofia's Deveti Septemvri Rayon where there is no single warehouse selling coal. There was one, three years ago, in Kurilo but it was closed down following the reconstruction of the railroad station. The warehouse in the Nadezhda district turned out to be full of empty containers.

A curious detail may be learned at the Ministry of Internal Trade and Public Services: Currently the country's warehouses are storing less fuel than last year but have sold more. Therefore, according to the laws of trade it is demand that determines the offer. Yet, as we said, the offer has already been promised. Meanwhile, however, the people are freezing and will continue to freeze asking themselves where are these 7,100 tons of coal per day which were to be delivered by the economic mining-power combines to the trade enterprises of the Fuel and Construction Materials Economic Directorate. In the past nine months nearly 53,000 tons of coal less than planned were mined.

In September, for example, some mines such as Bolshevik and Chukurovo produced less than half of the planned coal. The result of such minor deviations has been a major deviation: In September the commodity fund was 12,000 tons of coal short. At such times the disappointed people should not feel sorry for themselves but promptly buy briquettes. Hopefully, therefore, they go to the briquettes factory at Maritsa-Iztok. Yet, precisely at that time, the factory is either undergoing repairs or not working at full capacity, or else is working on an above-plan basis but has no freight cars and the briquettes remain unshipped and self-ignite as a result of the long wait.

Nevertheless, as frequently happens in our country, even though local raw materials may be available, we begin to import. So, barges loaded with life-saving coal start sailing toward Loam. Some of them were unloaded but two barges remained at the port and it took 20 days before they were unloaded. . . . In the final account, however, the citizen is not interested in all this. He wants his one or two tons of coal.

And, since the Terma Plant in Tutrakan pledged to produce 20,600 coal-burning stoves before the first seasonal cold, our citizen tries to buy one of them but can see that they are sold out even before being unloaded from the truck which has just arrived in front of the store on Luvov Most. Actually, his stove was one of the 7,630 not produced by the plant. . . .

At that point, the person who was cold and who realized that there was no hope for getting warm begins to consider whether it would not be better to spend the winter somewhere in a hot country and come back in the spring, with the storks. . . .

Bureaucratic Squabbles on Monopoly

Sofia STURSHEL in Bulgarian 9 Nov 79 p 3

[Article by E. Dimitrov]

[Text] Since conflicting views need a public, as was the case in ancient times, we shall let the readers determine who is right and who is wrong in the following case:

For the past two years an imported propane-butane cylinder filling installation has been ready for work at the Dinamo Plant in Sevlievo. Its capacity is 600 cylinders per day, sufficient to meet the gas requirements of virtually all of northern Bulgaria.

The Fuel and Construction Materials Economic Directorate in Sofia willingly agrees with all this but does not agree to allow anyone else to fill and sell cylinders. This is because they have been granted the monopoly!

In their view, it would be more economical for Sevlievo and northern Bulgaria to receive gas by train through the Bugas-Sofia-Sevlievo line.

This is precisely what is taking place. Despite the existence of this filling station in the center of our country, trains and truck convoys cover additionally over 500 kilometers to "justify" the monopoly enjoyed by the Fuel and Construction Materials Economic Directorate.

Let us also mention that, had the station at the Dinamo Plant worked in the last two years it would have paid for one-third of its cost.

Generally speaking, while departments and establishments are arguing between themselves, nerves and the people's money are wasted and so is the energy which our economy needs so badly.

Failure of Efforts To Save Electric Power

Sofia STURSHEL in Bulgarian 9 Nov 79 p 3

[Article by Slavi Slavov]

[Text] All of us are convinced that electric power must be saved. However, despite such convictions, slogans, diagrams, and amateur performances on the problem of economy, some industrial enterprises in Plovdiv have already exceeded their ceilings and incurred their initial electric power overexpenditures. The Maritsa Textile Combine has exceeded its limit by 730,000 kilowatt hours; the Asynchronous Electric Motors Plant, by 275,000 kilowatt hours; the Winemaking Plant in Perushtitsa by

254,000 kilowatt hours; the Stefan Kiradzhiv Plant by 140,000 kilowatt hours, and so on. The reasons are being studied and, since we are living in the age of scientific studies and conclusions, we may also conclude that electric power overexpenditures are due, among others, to an old inertia of letting the machines turn idle while their personnel give the illusion of working. . . .

However, electric power must nevertheless be saved. At least everyone is convinced of this. And if industrial enterprises are unable to save electric power despite their best will, the citizens should do so. The citizens, in turn, try to save. Many of them are trying to convert to heating with propane-butane. This is good. What is bad is that the two do not come together. Some countries, for example, have no propane-butane but have gas systems for heating, cooking, and power in internal combustion engines and, particularly, have available cylinders. We, in turn, have propane-butane but have no sufficient gas equipment for heating, cooking, and powering engines. We are particularly short of cylinders. That is why supplies of propane-butane in Plovdiv and elsewhere are in great difficulty. With requests for 1,200 cylinders daily, the Vtechnen Gaz enterprise in Kremikovtsi is supplying, most irregularly, 200 to 250. The reasons are objective: At one point the propane-butane shop in Burgas was undergoing repairs. After that the tankers hauling the propane-butane underwent repairs. When both the shop and the tankers were repaired, the Vtechnen Gaz enterprise in Kremikovtsi undertook its own repairs. This was not planned but was simply the result of a breakdown. . . . However, after the breakdown was repaired, there was more trouble. There were no propane-butane cylinders. In Plovdiv, for example, over 7,000 people were able to acquire in a variety of ways gas equipment for heating and cooking. However, only 500 of them have cylinders for their appliances. Therefore, such people as well are forced to consume electric power instead of propane-butane. Otherwise, the struggle for saving electric power goes on. . . .

Generally speaking, the struggle for electric power economy is being waged everywhere. The people would like to participate in it, but, what to do, when designers and builders built and are continuing to build houses without chimneys. Trakiya, the latest and biggest housing complex in Plovdiv, which will be inhabited by about 60,000 people, still has houses without chimneys. It is not the only one. Therefore, even the smallest breakdown in the electric power grid will force the people to go to bed, for no other possibility for converting to other types of fuel exists, least of all to propane-butane which does not need chimneys, for if there is a stove there is no cylinder and if both are available there would be no gas.

Old Men Left Without Heat

Sofia STURSHEL in Bulgarian 9 Nov 79 p 3

[Article by S. T.]

[Text] "The ceiling assigned to me for the use of electric power in 1980 was determined quite wrongly! This has become clear to anyone who has studied the case. Despite all this, however, I am not receiving any more electric power but unnecessary (to say the least) advice."

Asen D. Antov, 32 Kiril i Metodiy Street, Stanke Dimitrov

Asen Antov is 70 years old. In November 1978 he underwent difficult surgery. In order to convalesce somewhat, he went to Sofia for a while, with his wife, to live in his daughter's apartment. The two oldsters lived there until March after which they returned to Stanke Dimitrov. Soon afterwards, however, they were told the limit of electric power they could use in 1980--2,090 kilowatt hours, based on the 1978-1979 use (through October). However, no one took into consideration that the two old people had not lived in their home for a period of five months and that the amount that was granted does not meet their factual needs. At that point A. Antov went to the Electric Power Supply Economic Enterprise in Stanke Dimitrov and described the error. The officials checked their files and saw that, indeed, for those five months the electric meter registered zero use. However, instead of correcting the error, A. Antov was told that the limit will not be changed. The old man realized that this answer would not give him warmth. He wrote a letter to the okrug Electric Power Economic Combine in Sofia. The answer stated: ". . . we are unable to raise your ceiling for electric power, for this would violate the directive of the Ministry of Power Supply." Humanitarianism is violated for the sake of not violating the directive. Let the old man freeze as long as the directive is warm! In the interest of the truth, however, let us say that after its answer, the Electric Power Supply Economic Combine gave A. Antov valuable advice. The first was to buy a double rate electric meter with a clock. The second was to buy a heat retention stove. Let us note at this point that even though such advice was sincere, more advice could have been added such as the following: A. Antov should install steam heat in his house, make a chimney, buy some 20 heaters which would run 24 hours daily or else find work in Africa every winter. Therefore, the more advice is given the more A. Antov may choose one of them instead of making the rounds of editorial premises or violate various directives.

Coal Purchasing Difficulties

Sofia STURSHEL in Bulgarian 9 Nov 79 p 3

[Article by correspondent Marin Krusev]

[Text] Tuesday, 16 October, was a warm autumn day. There was a line waiting in front of the hard fuel sales center in Gorna Oryakhovitsa. I stood in line and my turn came.

"Wood or coal?" I was asked.

"Both."

"No more than 500 kilograms of wood can be purchased and as much coal as you wish. You are No 2,749. Therefore, come back sometime in January or the beginning of February!"

This must have been a misunderstanding! Yet, it was not. I would be entitled to coal and wood in the spring. I would be safe for the following winter. What about this one?!

I traveled to Veliko Turnovo looking for them. "We have been short of wood since spring. No orders are accepted. You could put your name down for briquettes and wait."

To wait for briquettes! What could I do without starter!

I went to Elena.

"We have not either wood or coal."

I asked Polski Trumbesh.

"We have no coal and wood. There may be in Svishtov."

"There is neither one nor the other."

What about Strazhitsa?"

"There is plenty of customers. There is no wood or coal!"

So! There is no solid fuel and fuel oil and electric power must be saved. I remember with sadness and envy the Veliko Turnovo "seals." Many of our newspapers and periodicals wrote articles about them with many photographs. We saw smiling men and women, naked, dunked to their waist in icy cold water or happily lying on the white snow. Lucky cold-resistant people! They have no problem with winter. But why should I be envious? Could we not, the other citizens of Veliko Turnovo Okrug follow their example? Could we not take up this initiative all of us? It would be both healthy and economical.

SURVEY OF POWER CAPACITY DEVELOPMENT SINCE 1944

Sofia ENERGETIKA in Bulgarian Nos 8-9, 1979 pp 4-9

[Article by Engineer Sheli Benatova, Ministry of Power Supply: "Power Supply During the 35 Years of the People's Regime"]

[Text] The end of World War II found the country lagging in all spheres of the economy and technology.

In 1944 the people's regime received an extraordinarily small energy base as its heritage. Fuel and power consumption was about 400 kg of comparison fuel per capita and consisted mainly of coal, wood and an insignificant proportion of electric power.

Interest in electrification appeared very early in Bulgaria--as far back as 1891, only 12 years after the invention of the electric light and 13 years after Bulgaria's liberation from Ottoman bondage. By the end of 1900 a significant number of measures had been taken for partial electrification, with a total capacity of 295 kW.

In the next 44 years the bourgeois governments managed to electrify only 784 cities and villages and to build 131 MW of capacity in over 100 small hydro-, thermo- and diesel electric power stations. In 1944 311 million kWh were produced--only 45 kWh per capita. Out of a total of 6,914,000 inhabitants, only 2,842,000 were supplied with electricity, and most of these used only one or two electric light bulbs. Entire villages were sunk in darkness. Not a single dam lake was built.

In terms of these indicators our country ranked among the last in Europe, standing several times lower than the average data for the world.

This state of affairs could not provide for rapid development of the national economy or measure up to the initiative that the masses of people had assumed of electrifying the cities and villages. Therefore the people's regime set about creating a mighty energy system by using the country's water and fuel resources.

A start was first made by building small power stations and expanding some of the existing ones. As early as 1946 the 750-kW Dolna Mitropoliya thermoelectric power station (TEPS) was commissioned; in 1947 the Mezdra, Koynare, Cherni Vit and other hydroelectric power stations (HEPS) were commissioned and the 7200-kW Maritsa-1 TEPS was expanded. In 1948 the following were commissioned: the 4500-kW Kalin dam-site HEPS, the Vulkan TEPS, and the expansion of the Ya. Kostov TEPS, the 12-MW Sofia TEPS, the Falkovets HEPS etc.

The following were completed and commissioned in 4 years of the First Five-Year Plan (1949-1952): the Maritsa-3 TEPS, the Republika TEPS, expansions of the Sofia TEPS and the Petrik TEPS, the Asenitsa I and II, Tusha, Vidima, Kitka, Petrovo, Razlog and other hydroelectric power stations. Several power lines were constructed and the V. Kolarov and Kalin dam lakes were completed.

During the Second Five-Year Plan (1952-1957) a start was made on major hydroelectric construction. The Studena, Al. Stamboliyski, G. Dimitrov and Iskur dam lakes and associated power stations were built, as well as the Petrokhan series of hydroelectric stations, the Studen Kladenets dam lake, the first power station of the Batak hydroelectric power line--the Batak HEPS etc. In 1952 the Republika TEPS was commissioned. New transformer stations and substations and thousands of kilometers of transmission networks were built. Some of the already existing power stations were expanded.

In subsequent years and five-year plans hydroelectric construction was carried out systematically and single-mindedly. In 1960 the construction of the Batak hydroelectric power line comprising three power stations with a total capacity of 230 MW was completed.

One after the other the capacities of three Arda power stations with a total of 274 MW were commissioned, too.

During the Sixth and Seventh Five-Year Plans the power stations of two large series--Belmeken-Sestrimo and Dospat-Vucha--with a total capacity of 1042 MW were commissioned.

In 1978 86 hydroelectric power stations with a capacity of 1868 MW were operating in the power system. Whereas the 47 power stations built before 1944 had an average capacity of 1 MW, now 1237 MW are concentrated in just seven dam-site power stations with a capacity of over 100 MW (average 177 MW per power station), or 66 percent of total HEPS capacity.

The bulk of HEPS capacity (90 percent) is concentrated in 24 dam-site power stations, and the remaining 10 percent in 62 runoff river stations with and without daily equalization.

It is characteristic of most series of hydroelectric power stations that, due to the lack of great rivers in the high parts of the mountains, water is trapped by building a great number of water collectors and via a system of canals and tunnels the water is diverted for storage in reservoirs. The construction of dam lakes for annual or longer-term equalization of water is necessitated by the character of the runoff, which is highly irregular in its distribution not only seasonally but also over the space of many years since the formation of runoff in our country is caused mainly by the melting of snow deposits and precipitation in the spring period.

The total impounded volume of the 28 reservoirs built and operated within the power complex is 3,870,000,000 cubic meters and the trapping and conveying of water to them and to the power stations are effected by water-supply and power diversions 616 km in length and 420 water collectors.

Most of the series of hydroelectric power stations that have been built have a multipurpose character. Other than for the production of electric power, their water is used also for irrigation, for drinking and industrial water supply, fishing etc.

Last year (1978) alone, the multipurpose dam lakes provided 763,000,000 cubic meters of water mass for irrigation, with which 1,115,000 decares were irrigated; 287,000,000 cubic meters of water mass were provided for drinking water supply, and 223,000,000 cubic meters for industrial water supply.

However, the main purpose of the hydroelectric power stations that have been built and are under construction is to meet the peak portion of power loads, provide the system's frequency reserve and take up rapidly changing loads. Of special importance to the power system is the participation of HEPSs in the autumn-winter peak when loads are significantly higher than in the summer.

Before 1960 hydro- and thermoelectric power stations had a comparable share of the country's electric power capacity and total production. In 1960 the capacity of both kinds of sources was on a par, but production was in a ratio of 40:60 with thermoelectric power stations having the preponderance. After that year (1960), thermoelectric power stations were built at a faster rate, thus permitting achievement of a considerable increase of electricity production.

Native coal and power stations built on the basis thereof have an important part in the development of the power supply. The power stations of the East Maritsa complex have a special place. Built on the basis of the East Maritsa bed were the 500-MW Purva Komsozolska TEPS with its first unit commissioned in 1960 and the 600-MW Maritsa East-2 TEPS and its initial capacity commissioned in 1966. The third, 840-MW power station, at which two units are already in operation, is under construction. A significant proportion of the country's electric power is produced with East

Maritsa coal, which has been worked since 1960. In some years this proportion amounts to 36 percent. In 1978 the complex produced 15,600,000 tons of coal, which is 58 percent of the country's total production.

The 630-MW Bobov Dol TEPS was built on the basis of coal from the Bobov Dol field. The power station has been operating since 1973.

Operating besides with native coal are the Republika TEPS, the Maritsa-3 TEPS, the Avram Stoyanov TEPS, in part the Kremikovtsi TEPS, the TEPS at the nitrogen fertilizer plant in Stara Zagora and other, smaller plant TEPSs. Before 1965 native coal provided more than 45 percent of the total production of electric power, but in 1978 the proportion was 34 percent.

In 1964 the import of energy coal from the USSR began, and on this basis a succession of plants was built such as the Ruse TEPS, the Devnya TEPS (in 1965), the 630-MW Varna TEPS (in 1968), the Vidin TEPS (in 1969), the Svishtov TEPS (in 1971). The expansion of the Varna TEPS with an additional 630 MW is in operation prior to completion.

In 1970 28.5 percent of the country's total power was produced with imported coal, but in 1978 this proportion fell to 22 percent.

Due to the lack of our own efficient fuels (liquid and gaseous), the latter can have no important share in our electric power budget. Before 1960, about 3-4 percent of electric power was produced with liquid fuel at diesel power plants. In 1944 102 diesel power plants with total capacity of 17 MW were in operation. Subsequently some of them were dismantled. After nationalization of power supply enterprises in 1947 it was assumed that diesel power stations would gradually be put into reserve, but the electric power shortage in certain regions of the country in 1951-1953 necessitated the procurement of more than 20 diesel generator groups, which were installed in the regions that needed them most and operated until 1970. Later some centralized district heating plants using liquid fuel or gas were built such as the Traycho Kostov TEPS and Burgas TEPS in 1964, the Vratsa TEPS in 1966, the Pleven TEPS and the Plovdiv TEPS in 1970, and in 1971 the Sofia TEPS was converted from coal to mazut and gas in order to reduce the dust over the capital.

In 1978 the stations and groups operating on gas and mazut constituted 12.5 percent of the country's total capacity and produced 15.6 percent of the total combined power and heat production.

The development of thermoelectric power stations was also accompanied by a significant concentration of capacity. In 1945 the highest-capacity power station in our country was the 19-MW Kurilo TEPS, but today the Varna TEPS is 1050 MW. Some 3200 MW--more than 40 percent of the country's entire capacity--is now concentrated in five thermoelectric power stations, three of which are in the Maritsa-East complex.

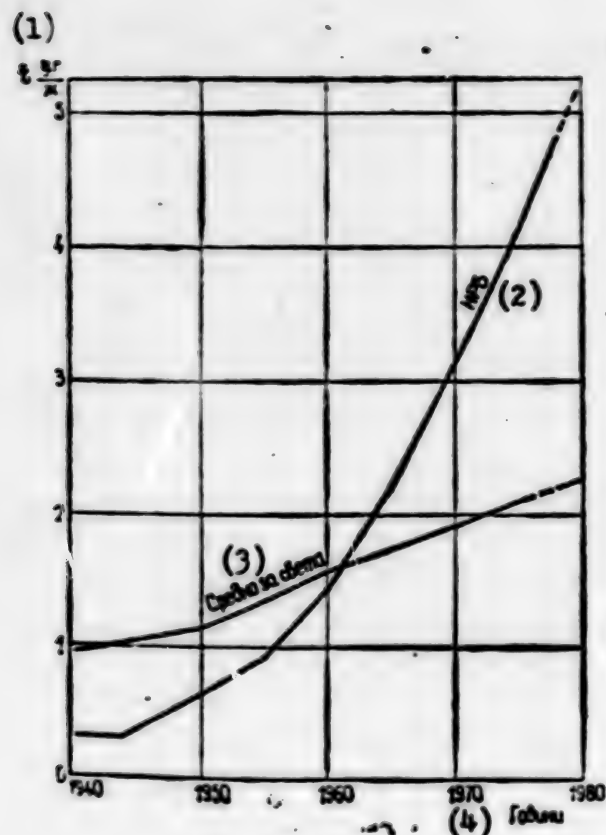


Figure 1. Per capita power consumption in Bulgaria and the world

Key:

1. Tons of comparison fuel per capita
2. Bulgaria
3. World average
4. Years

A qualitative change took place in Bulgaria's power supply in 1974 as a result of the commissioning of the first atomic power station operating with two reactors and a total capacity of 880 MW. An expansion of the power station is under construction which will double its capacity.

In 1977 and 1978 the Kozloduy atomic power station provided 19-20 percent of the country's total electric power production. In 1977 only two countries in the world were ahead of us in terms of this yardstick: Belgium with 25 percent and Sweden with 22 percent. Atomic energy's share of power production for Europe averages about 6 percent. These data confirm the

farsightedness of our energy policy, mapped out in forecasts as early as two decades ago and implemented in fact before the energy crisis.

Table 1

Gross Power Consumption and Maximum Load
of Bulgarian Power System

(1) Година	(2) Бруто потребление на електроенергия			(6) Максималь- ная нагрузка, MW
	(3) млн. kWh	(4) среднего- годовой прирост, %	(5) kWh/ч	
1944	311		45	
1950	819	17,5	113	
1955	2106	20,8	281	346
1960	4685	17,3	596	808
1965	10232	16,9	1246	1591
1970	19407	13,7	2286	3295
1975	28860	8,3	3320	5000
1978	35305	7,0	3990	6079

Key:

1. Years
2. Gross power consumption
3. 000,000 kWh
4. Average annual increase, %
5. kWh per capita
6. Maximum load, MW

In 1949 the exchange of electric power with, and the import thereof from, Romania began. Later connecting power lines with Yugoslavia were built, too, and since 1972 our system has been linked with the Moldavian power system of the USSR via the 400-kV Kochurgan-Dobrudzha power line. We now have connecting 400-kV power lines besides with Yugoslavia and Turkey. Linkage of our system with the Greek system is impending.

Before 1972 the import and exchange of electric power with other countries had no significant share in the country's energy budget, but since then significant quantities, amounting to 4 billion kWh in 1974, have been imported from the USSR. In 1978 11 percent of our gross power consumption was provided through imports.

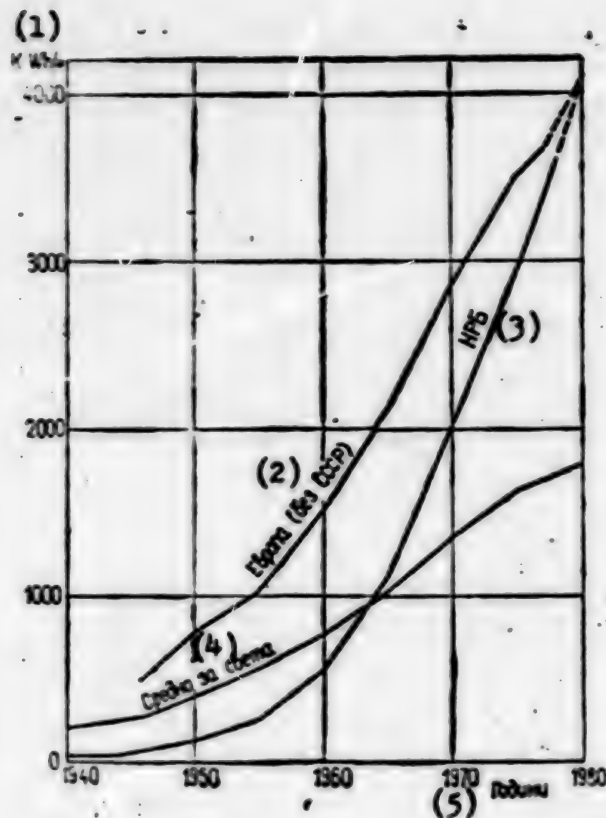


Figure 2. Per capita power consumption in Bulgaria, Europe and the world (after deduction of power stations' own needs)

Key:

1. KWh per capita
2. Europe (excluding the USSR)
3. Bulgaria
4. World average
5. Years

The development of coal production, hydroelectric power engineering and atomic power engineering and the import of significant quantities of energy resources have created conditions for our power consumption to grow at a rapid rate (Figure 1). In 1978, per capita power consumption in Bulgaria was over 4800 tons of comparison fuel and exceeded the world average by about 2.2-fold. In 1961 we reached the world average value with a consumption of 1600 kg.

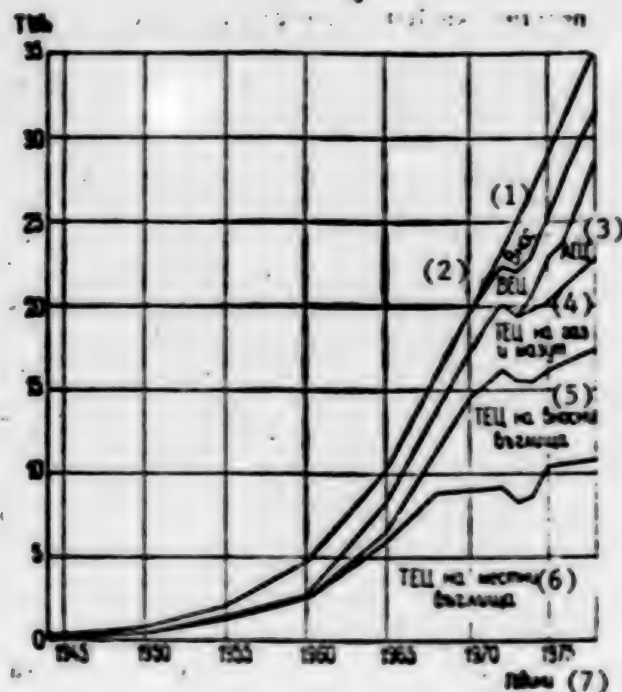


Figure 3. Power production and consumption in Bulgaria

Key:

1. Imports
2. Hydroelectric power stations
3. Atomic power stations
4. Gas- and mazut-fired thermoelectric power stations
5. Thermoelectric power stations using imported coal
6. Thermoelectric power stations using native coal
7. Years

Energy consumption is the basis for the creation of national product, the foundation for raising the living standard. International statistics and analyses of many economic institutes show that only countries with high energy consumption have a high gross national product and, conversely, states with a per capita gross national product less than \$1000 annually consume less than 100 kg of comparison fuel per capita.

We consume almost as much energy per capita as in Austria, Japan, France and Romania, and more than in Italy, Hungary, Yugoslavia, Turkey etc. Unfortunately, however, while we have caught up with a number of advanced countries in specific power consumption, we still have not overtaken them in effective utilization of energy resources.

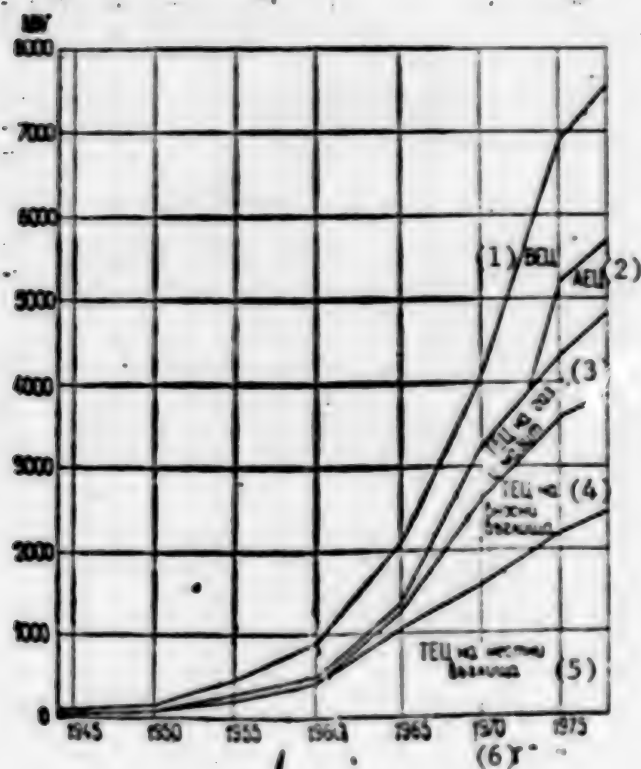


Figure 4. Installed capacity in Bulgaria

Key:

1. Hydroelectric power stations
2. Atomic power stations
3. Gas- and gas-turbine power stations
4. Thermoelectric power stations using imported coal
5. Thermoelectric power plants using native coal
6. Years

The great growth of power consumption in our country, just as in other countries, has been accompanied by significant structural changes reflecting the increased possibilities of the interchangeability of different power sources in individual spheres of consumption. The present-day development of the fuel and electric-power budget also reflects the trends towards a changeover from the direct utilization of fuels to the utilization of converted kinds.

The electrification of our energy budget has grown significantly from 155 kWh per ton of comparison fuel in 1944 and 418 in 1960 and reached approximately 830 kWh per ton of comparison fuel in 1978.

Table 2

Electric Power Production in Bulgaria

(1) Година	(2) Термични централе				(7) ВЕЦ	(8) АЕЦ	(9) Общо в страната
	(3) местни въглища	(4) внесени въглища	(5) газ и нафта	(6) общо			

(10) в млн. киловатт-часове

1944	148	—	10	158	153	—	311
1950	503	—	24	527	273	—	797
1955	1368	—	25	1423	650	—	2073
1960	2575	—	193	2768	1889	—	4657
1965	5959	665	1619	8243	2005	—	10248
1970	9049	5563	2745	17357	2158	—	19515
1975	10457	5709	4064	20230	2453	2554	25237
1978	10825	6920	4927	22672	2909	5911	31492

(11) в проценти

1944	47,6	—	3,2	50,8	49,2	—	100
1950	63,1	—	3,0	66,1	33,9	—	100
1955	66,0	—	2,6	68,6	31,4	—	100
1960	55,3	—	4,1	59,4	40,6	—	100
1965	58,1	6,5	15,8	80,4	19,6	—	100
1970	46,3	28,5	14,7	88,9	11,1	—	100
1975	51,5	22,6	16,1	80,2	9,7	10,1	100
1978	44,4	22,0	15,6	72,0	9,2	18,8	100

Key:

1. Year
2. Thermoelectric power stations
3. Native coal
4. Imported coal
5. Gas and mazut
6. Total
7. Hydroelectric power stations
8. Atomic power stations
9. Total for country
10. In 000,000 kilowatt-hours
11. In percentages

Table 3

Installed Capacity in Bulgaria

(1) Година	(2) Топлоелектрични централни				(7) ВЕЦ	(8) АЕЦ	(9) Общо за страната
	(3) Изкопана въглища	(4) Внесени въглища	(5) Газ и нафта	(6) Общо			

(10) в мегаватти

1944	67	—	17	84	47	—	131
1950	97	—	14	111	65	—	176
1955	258	—	40	298	134	—	432
1960	412	—	53	465	460	—	925
1965	1064	115	178	1357	770	—	2127
1970	1578	1028	658	3264	814	—	4078
1975	2207	1180	925	4312	1720	880	6912
1978	2467	1402	945	4814	1868	880	7562

(11) в проценти

1944	51,1	—	13,0	64,1	35,9	—	100
1950	55,1	—	9,0	63,1	36,9	—	100
1955	59,7	—	9,3	69,0	31,0	—	100
1960	44,6	—	5,7	50,3	49,7	—	100
1965	50,0	5,4	8,4	63,8	36,2	—	100
1970	38,7	25,2	16,1	80,0	20,0	—	100
1975	31,9	17,1	13,4	62,4	24,9	12,7	100
1978	32,6	18,6	12,5	63,7	24,7	11,6	100

Key:

1. Years
2. Thermoelectric power stations
3. Native coal
4. Imported coal
5. Gas and mazut
6. Total
7. Hydroelectric power stations
8. Atomic power stations
9. Total for country
10. In megawatts
11. In percentages

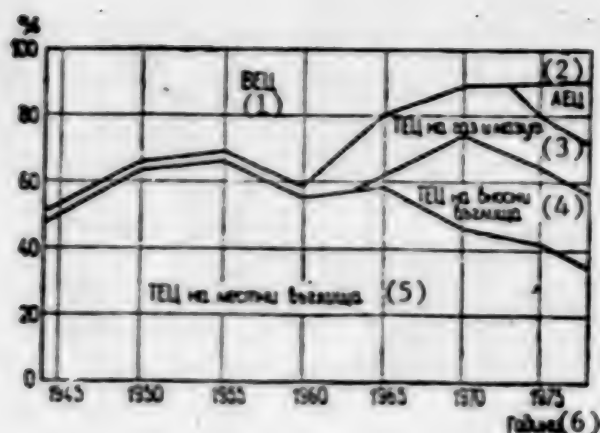


Figure 5. Structure of electric power production in Bulgaria

Key:

1. Hydroelectric power stations
2. Atomic power stations
3. Gas- and mazut-fired thermoelectric power stations
4. Thermoelectric power stations fired with imported coal
5. Thermoelectric power stations fired with native coal
6. Years

The development of electric power production capacity and the imports made in recent years have created conditions for our gross power consumption to grow at a significant rate (Table 1 and Figure 2). In 1963 we reached the world average with a consumption (after deduction of power stations' own needs) of about 900 kWh per capita.

In 1978 the country's gross consumption was over 35 billion kWh. Gross consumption per capita annually was 3990 kWh, exceeding the world average twofold. Our per capita power consumption is close to that in France and greater than that in Italy, Poland, Hungary, Spain and all our neighboring countries, coming very close to average consumption in Europe.

Tables 2 and 3 and Figures 3-6 present data on the production, installed capacity and consumption of electric power for the period from 1944 to 1978, as well as the scale of individual types of power stations and sources.

The problem of the electrification of cities and villages, which was one of the most important problems in the first few postwar years, was solved

basically as early as 1960. Whereas in 1944 only 41 percent of the population enjoyed electric power, in 1960 4103 cities and villages with 92 percent of the population had been electrified and from 1970 on practically 100 percent of the cities and villages had been electrified.

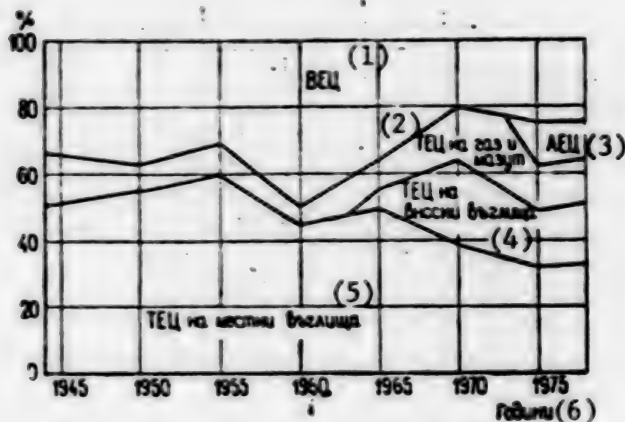


Figure 6. Structure of installed capacity in Bulgaria

Key:

1. Hydroelectric power stations
2. Gas- and mazut-fired thermoelectric power stations
3. Atomic power stations
4. Thermoelectric power stations fired with imported coal
5. Thermoelectric power stations fired with native coal
6. Years

In all, out of the total available gross electric power more than 50 percent is consumed in industry, 20-22 in the municipal and domestic sector, 18 percent for power stations' own needs and losses in the power system, and altogether about 8 percent in agriculture, construction and transportation.

Development of the power transmission network has passed through three characteristic stages: local power supply; oblast systems; linkage of the entire country in a unified system.

Before 1944 there had been built in the country 167 km of 35-kV power lines, 435 km of 60-kV and 5317 km of 3- to 20-kV low-voltage networks and 2082

transformer substations. In 1949 110-kV voltage was introduced, and in 1957 220-kV. In 1973 the first 400-kV facilities were put into regular operation. At the end of 1978 there were functioning in the power system 10,000 km of 110-, 220- and 400-kV power lines, over 100,000 km of 0.4- to 20-kV power lines, 250 substations and over 34,500 transformer substations.

Centralized district heating began to be developed in Bulgaria in 1950 with the commissioning of the Sofia TEPS. In the past 10-15 years it has been expanded and includes Pernik, Pleven, Vratsa, Shumen, Ruse, Plovdiv, Gabrovo and other cities in addition to Sofia.

The development of centralized district heating has as its purpose to meet part of the thermal energy needs of industry and the municipal and domestic sector, to effect fuel economy as a result of combined power and heat production, and to replace scarce liquid fuels through the use of native coal at TEPSs.

In 1977 a decree of the Council of Ministers set up a national energy complex. The program for its development in the Seventh Five-Year Plan and up to 1990 charts several basic courses of action, the working out of which will assure the meeting of the country's energy and electric power budget in the years ahead.

The target is implementation of the greatest possible program of increasing atomic power station capacity not only by expansion of the Kozloduy APS, but also by building new stations, mainly with the help of the Soviet Union. Coal output will be increased at a rapid rate for the main purpose of firing existing and new thermoelectric power capacity. The use of all other native power resources, and especially of renewable resources such as water power, solar and geothermal energy, is of special importance at the present stage.

The other course of action is fuel and energy conservation and bringing about their efficient use in all spheres of economic life and in the municipal and domestic sphere.

6474

CSO: 2200

MINISTER NAGR DISCUSSES 1979 AGRICULTURAL RESULTS, 1980 PLAN

Bratislava PRAVDA in Slovak 19 Dec 79 p 2

[Excerpt] Despite the fact that according to the most recent estimates of the Federal Statistical Office gross agricultural production this year will be 8.2 percent greater than was the annual average in the Fifth Five-Year Plan, we are not achieving the goals set out in the annual plan," said the Federal Minister of Agriculture and Food J. Nagr at a press conference yesterday.

The fulfillment of the plan for market production for the state fund has been 98.5 percent reached and the deliveries by the food industry to the domestic market have been 98.7 percent fulfilled. The deliveries of food to the domestic market will be 17.2 percent greater this year than last, of which meat--whose consumption has risen to 84 kg per person--constitutes 11 percent.

Demanding tasks await our farmers and workers in the food industry in the coming year. Compared to this year's actual expected gross output, the plan imposes on them an increase of 7.2 percent, of which vegetables constitute 16.9 percent (for the market, 1.7 percent). Gross production in the food industry is to increase by 2.4 percent and deliveries to the domestic market by 3.3 percent.

The farmers have already established a good basis for meeting next year's tasks and the attaining of the goals set out by their high quality fall work. They have sown 1.413 million hectares of cereals and exceeded the plan for sowing of winter wheat by 6.3 percent. Winter barley--that important fodder--has been sown on 75,000 hectares, which is 21,400 hectares more than last year. The area of winter mixtures (140,000) is greater by 8,000 hectares than last year. Stubblefield mixtures--that important source for expanding the fodder base--were planted on 10 percent of the sown area, the largest amount in history. The area planted in winter rape is greater by 12,500 hectares than last year and the percentage of varieties of rape having a lower erucic acid content suitable for the production of edible oil has risen substantially. At the beginning of spring there were 100,000 hectares more prepared area fertilized with manure than last year.

In individual crops the plan establishes the following targets for the coming year: to grow 11 million tons of grain, 14 million tons of fodder, 8.2 million tons of sugar beets, 260,000 centners of hops, etc.

In animal production the average [milk] production per cow is supposed to reach 2,974 liters per year, the growth of slaughter beef cattle 80-81 dg per head per day, an increase in the beef cattle herd by 0.7 percent, etc. The new economic mechanisms which take effect on 1 January 1980 will help make the attainment of those goals possible.

CSO: 2400

BRIEFS

TESTING OF NEWEST COMPUTER--Southwestern Railroads Computer Center in Plzen is the first in the CEMA countries which is making practical tests of the latest data storage prototype ROBOTRON 4230 whose nucleus is the efficient minicomputer KRS 4201. The data storage system produced by the ROBOTRON combine in the GDR replaces the obsolete and slow system of punched card storage input. The new computer at the Southwestern Railroads is now collecting data on express parcels, about the operations of the central loading and unloading stations which are then processed on the EC 1033 computer. [Text] [Plzen PRAVDA in Czech 19 Nov 79 p 1]

NUCLEAR POWER TURBINES--The fourth quarter (1979) at the subsidiary plant Energy Machine Works of Skoda Plzen, in the area of steam turbines, is mainly devoted to the processing of deliveries for the first 220 megawatt turbine for the nuclear power station V2 in Jaslovske Bohunice. It is the fifth such machine produced for nuclear power stations in the CSSR. Through the foreign trade assistance of the Skoda-export, a delivery of a turbine unit for the electric power station in Neuvas, Cuba, will be realized in the fourth quarter. Its capacity is 125 megawatt and it is the first of three turbines to be delivered for the expansion of that electric power station. Already, the third unit with a capacity of 110 megawatt is in production for an Egyptian power station Kafr el Dawar and additional nine turbines will be produced for the propulsion of sugar mills in Cuba. Their total number should reach 200 units as early as the beginning of 1980. In the area of nuclear power equipment, a pressure testing of the first pressure vessel complex of the VVER 440 reactor for the PAKS power station in Hungary is being prepared. At the same time a second pressure vessel for the second unit of the Hungarian power station is already in production. [Text] [Plzen PRAVDA in Czech 19 Nov 79 p 5]

ROLLING MILL FOR IRAN--The Zdar Machine and Foundry workers are assembling in the Iranian Isfahan a medium section-rolling mill 500 which is to produce up to 800,000 tons of finished products annually. It is arranged in two rolling sequences with 16 rolling mill stands. Their locations are chosen according to the type of material being rolled. The new rolling mill will enable a continuous rolling of beams and other simple profile items. The material will run continually from the billet storage of finished products. Stationary P 630 cold shear machines from ZDAS, n.p. for cutting the rolled sections will also be part of the mill. [Text] [Brno ROVNOST in Czech 29 Nov 79 pl]

THRUST OF FOREIGN TRADE SEEN TOWARD INCREASED EXPORTS

West Berlin DIW-WOCHENBERICHT in German Vol 46 No 47, 22 Nov 79 pp 479-484

[Analysis by German Institute for Economic Research, West Berlin: "GDR Foreign Trade: Import Restrictions Due to Inadequate Export Capabilities--Renewed Price Increases and Slightly Lower Deficit in 1978"]

[Text] In 1978 the GDR's foreign trade turnover (exports plus imports)¹ rose by less than 6 percent, substantially less than in the average of the years since 1970 (12 percent). Responsible was the small increase in imports (+ 1.7 percent). The GDR succeeded, though, in considerably raising its exports by just over 10 percent.

GDR statistics show a 3-4 percent increase in 1978 foreign trade turnover at constant prices. Real dimensions therefore, similar to the nominal development, also enjoyed a far smaller growth than in earlier years. Due to the continuing shortage of solid data in GDR foreign trade statistics it is not possible, though, to ascertain in how far the trend of import prices differs from that of export prices. In view of the price movements on the world markets, the price setting methods of CEMA and the goods structure of GDR foreign trade it may be assumed with some confidence that the rate of price increases in the GDR was greater for imports than² for exports. In other words, in 1978 GDR imports have declined in real terms² while the volume of exports has risen.

The 1978 GDR balance of trade was once again in deficit; still, at 4.5 billion VM [valuta marks]³ the deficit was far below the 8 billion VM of 1977, the highest amount recorded so far. In 1978 91 percent of imports were covered by exports; the comparable figure in 1977 was only 84 percent. Since 1974, when the scissors opened between imports and exports, the accumulated balance of trade deficit has grown to more than 26 billion VM; this corresponds to nearly 60 percent of the value of 1978 exports.

Table 1--GDR Foreign Trade¹⁾ By Groups of Countries

(1) Ländergruppen	1976	1977	1978
	(2) in Mrd. Valuta-Mark ²⁾		
(3) Einfuhr, gesamt	45,92	49,88	50,71
(4) Sozialistische Länder ³⁾	29,11	34,21	35,45
(5) RGM-Länder	27,93	32,70	34,03
(6) Westliche Industrieländer ⁵⁾	14,62	13,16	12,90
(7) Entwicklungsländer	2,19	2,51	2,36
(8) Ausfuhr, gesamt	39,54	41,84	46,17
(4) Sozialistische Länder ³⁾	28,22	31,25	34,40
(5) RGM-Länder	26,71	29,54	32,58
(6) Westliche Industrieländer ⁵⁾	9,59	8,60	9,10
(7) Entwicklungsländer	1,73	1,99	2,67
(9)	1) Zu jeweiligen Preisen; Wertstellung fob; Verkäufer- bzw. Käuferland. 2) Valuta-Mark = VM; statistische Recheneinheit zum Ausweis des Außenhandels der DDR; Umrechnungskurs: 4,67 VM = 1 Transfer-Rubel (TRbl). 3) RGM-Länder und sonstige sozialistische Länder. 4) Albanien, Bulgarien, CSSR, Kuba, Mongolei, Polen, Rumänien, UdSSR und Ungarn. 5) Sogenannte kapitalistische Industrieländer (Gruppenausweis).		
(10)	Quellen: Statistische Jahrbücher der DDR; Berechnungen und Schätzungen des DIW nach Planerfüllungsbericht 1978 (Neues Deutschland vom 19. Januar 1979, S. 3f.) und anhand des Statistischen Jahrbuchs und des Außenhandelsjahrbuchs Polens, des Statistischen Jahrbuchs des RGM und Partnerlandangaben.		

Key:

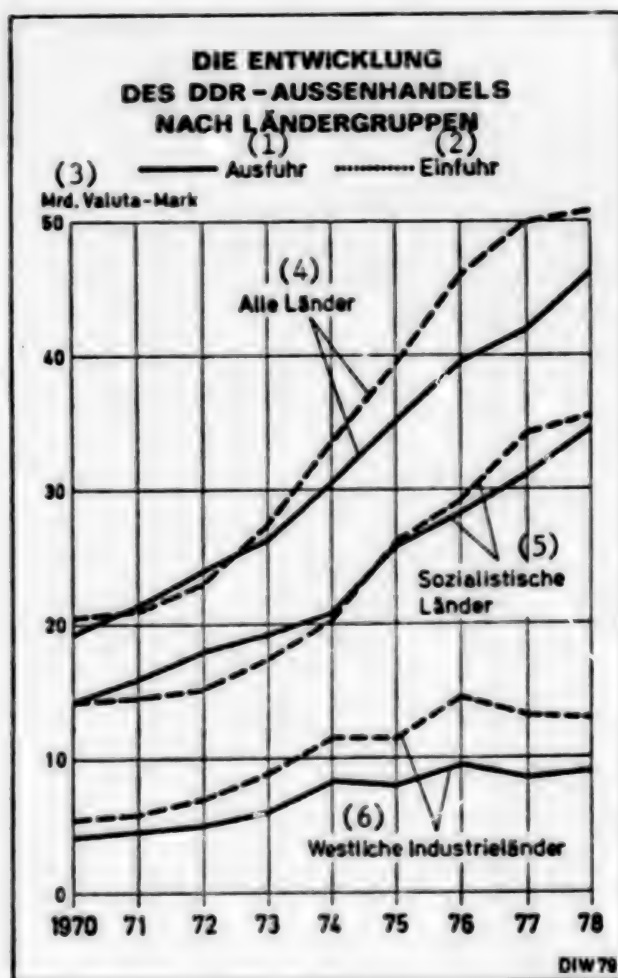
1. Group of countries
2. Billion valuta marks
3. Imports, total
4. Socialist countries
5. CEMA countries
6. Western industrial countries
7. Developing countries
8. Exports, total
9. Footnotes: 1) At prevailing prices; value date fob; seller and buyer country respectively.-- 2) Valuta mark = VM; statistical unit of account to record GDR foreign trade; conversion rate: 4.67 VM's = 1 transferable ruble (TRbl).-- 3) CEMA countries and other socialist countries.-- 4) Albania, Bulgaria, CSSR, Cuba, Mongolia, Poland, Romania, USSR and Hungary.-- 5) So-called capitalist industrial countries (group return).
10. Sources: GDR statistical yearbooks; DIW calculations and estimates based on the 1978 plan fulfillment report (NEUES DEUTSCHLAND, 19 January 1979, pp 3 ff) and the statistical yearbook and foreign trade book of Poland, the CEMA statistical yearbook and reports from partner countries.

Declining Interlocking of Western Trade Relationships

1978 development proceeded with considerable regional fluctuations, especially with regard to imports. While a 4 percent growth was recorded in imports

from socialist or CEMA countries, slight declines seem indicated for imports from Western industrial and developing countries. This is a surprising result--especially regarding Western trade--because data from the partner countries report a rise.⁴

Graph 1--The Development of GDR Foreign Trade by Groups of Countries



Key:

- | | |
|-------------------------|---------------------------------|
| 1. Exports | 4. All countries |
| 2. Imports | 5. Socialist countries |
| 3. Billion valuta marks | 6. Western industrial countries |

GDR exports in Western trade (including inner-German trade) increased at below average rates (6 percent); on the other hand deliveries to CEMA countries rose by 10 percent, the same as total exports. At 30 percent exports to the developing countries expanded quite disproportionately, but in total GDR exports these countries still hold only a modest share (6 percent). It should be noted that in 1978 the balance of trade with the developing

countries ceased to be in deficit after having been in that situation since the beginning of the raw material price inflation.

In recent years the divergent development of prices in trade with the CEMA on the one hand and in the exchange of goods with all other countries on the other⁵ has had the result that different regional structures have emerged, depending whether prevailing or constant prices are taken as the basis.⁶ This was particularly pronounced in 1974 and 1975, when prices in Western trade surged upward while remaining steady in intra-Bloc trade. The ensuing decline in the CEMA countries share in the nominal foreign trade, however, has since been made up. In 1977 no differences were recorded in the movement of prices for CEMA intra-Bloc trade and the exchange of goods with all other countries. The 1977 shifts in the regional structure favoring the CEMA countries must therefore be ascribed to a genuinely different development. While trade with the CEMA countries expanded quite strongly in real terms--at more than 10 percent--, the exchange of goods with all other countries declined. This state of affairs changed in 1978: Intra-Bloc trade and all other foreign trade expanded. As the result of the development of volume and prices in 1978 the CEMA countries--at 69 percent--achieved the highest volume in GDR foreign trade turnover since 1968.

Price Increases for Raw Materials and Fuels...

The goods structure also reflects price influences. This holds true most of all for imports: In recent years the share of the goods group fuels, mineral raw materials and metals has shown a greatly above proportional trend in nominal terms. While total GDR imports rose by 86 percent in the period 1973-1978, this goods group expanded by 125 percent (from 6.7 billion VM to 15.1 billion VM). By now the socialist countries meet more than 80 percent of the GDR's import needs for energy sources, minerals and metals. The above average rise in these items proceeded at the expense of investment goods, particularly machines and plant. A crucial structural weakness of GDR foreign trade was thus even further emphasized.⁷

The burden placed on the GDR economy by the rise in raw material prices may also be gauged from the development of the balance in the item energy sources, minerals and metals. The GDR's excess of imports of these items rose from 3.8 billion VM in 1973 to 10.4 billion VM in 1978.

... Call for Larger Exports of Finished Goods

It is true that the GDR was able at the same time to raise its volume of exports, especially of machines and industrial consumer goods, the traditional surplus products. This was not sufficient, though, to compensate the increase in raw material imports. The GDR tried to give another push to the growth of exports but failed in the attempt; in fact the rate of growth tended to decline. While the real expansion of exports amounted to an average of 9 percent per annum from the mid-1960's to the time raw material prices shot up, growth rates declined subsequently.

Table 2-- Development and Regional Structure of GDR Foreign Trade

	1971	1972	1973	1974	1975	1976	1977	1978
(1) Entwicklung zu jeweiligen Preisen ¹⁾								
(2) Einfuhr	2,8	9,2	19,6	22,8	17,0	16,9	8,6	1,7
(3) Ausfuhr	10,8	12,2	9,4	16,3	15,3	12,6	5,9	10,3
(4) Umsatz	6,7	10,8	14,4	19,6	16,2	14,9	7,3	5,6
(5) Sozialistische Länder ²⁾	6,8	9,9	10,7	11,6	26,3	10,6	14,2	6,7
(6) RGW-Länder ³⁾	6,5	11,8	11,2	10,7	26,1	10,9	13,9	7,0
(7) UdSSR	3,9	9,5	5,1	8,5	32,0	4,7	16,8	7,6
(8) Westliche Industrieländer ⁴⁾	6,3	17,3	23,7	32,8	- 2,5	25,5	-10,1	1,1
(9) Entwicklungsländer	7,1	-12,9	21,7	74,2	2,7	20,4	15,0	11,6
(10) Entwicklung zu konstanten Preisen ¹⁾								
(2) Einfuhr	2,1	7,9	12,6	8,7	5,0	11,1	-	-
(3) Ausfuhr	10,2	11,9	7,5	8,4	7,2	5,8	-	-
(4) Umsatz	6,0	9,9	10,0	8,6	6,0	8,5	4,4	3,5
(5) Sozialistische Länder ²⁾	6,1	8,9	10,5	8,9	7,7	3,7	10,4	3,6
(11) Obige Länder ⁵⁾	5,8	12,9	8,6	7,6	2,0	20,9	- 9,4	3,5
(12) Regionalstruktur in jeweiligen Preisen ⁶⁾								
(5) Sozialistische Länder ²⁾	71,6	71,1	68,7	64,1	69,7	67,1	71,4	72,1
(6) RGW-Länder ³⁾	67,2	67,9	66,0	61,0	66,2	63,9	67,9	68,8
(7) UdSSR	38,1	37,7	34,6	31,4	35,7	32,5	35,4	36,0
(8) Westliche Industrieländer ⁴⁾	24,3	25,8	27,9	31,0	25,9	28,3	23,7	22,7
(9) Entwicklungsländer	4,1	3,2	3,4	4,9	4,4	4,6	4,9	5,2
(13) Regionalstruktur in konstanten Preisen ⁶⁾								
(5) Sozialistische Länder ²⁾	71,6	70,8	71,2	71,5	72,6	69,4	73,5	73,5
(6) RGW-Länder ³⁾	67,4	67,8	68,5	68,8	69,4	66,3	69,8	70,0
(11) Obige Länder ⁵⁾	28,4	29,2	28,8	29,5	27,4	30,6	26,5	26,5
(14) 1) Veränderung gegenüber dem Vorjahre in %.-2) RGW-Länder und sonstige sozialistische Länder.-3) Albanien, Bulgarien, CSSR, Kuba, Mongolei, Polen, Rumänien, UdSSR, Ungarn und Vietnam (ab 1978).-4) Sogenannte kapitalistische Industrieländer (Gruppenausweis).-5) Westliche Industrieländer und Entwicklungsländer.-6) Alle Länder = 100.								
(15) Quellen: Berechnungen des DIW anhand der Angaben der Statistischen Jahrbücher der DDR.								

Key:

1. Development at prevailing prices
2. Imports
3. Exports
4. Turnover
5. Socialist countries
6. CEMA countries
7. USSR
8. Western industrial countries
9. Developing countries
10. Development at constant prices
11. All other countries
12. Regional structure at prevailing prices
13. Regional structure at constant prices
14. Footnotes: 1) Percentage change by comparison to the previous year.
2) CEMA countries and other socialist countries.-- 3) Albania, Bulgaria, CSSR, Cuba, Mongolia, Poland, Romania, USSR, Hungary and Vietnam (from 1978).-- 4) So-called capitalist industrial countries (group return).-- 5) Western industrial and developing countries.-- 6) All countries = 100.

[Key continued on following page]

15. Sources: DIW calculations based on data from GDR statistical yearbooks.

Admittedly, a slight speed-up was recorded in 1978. Involved here in particular were exports of machines and equipment which showed a 13 percent growth. The GDR was certainly also able to command higher prices, but the largest part of the rise in export value is likely to be due to greater volume.

Western Trade: Continuing in Deficit

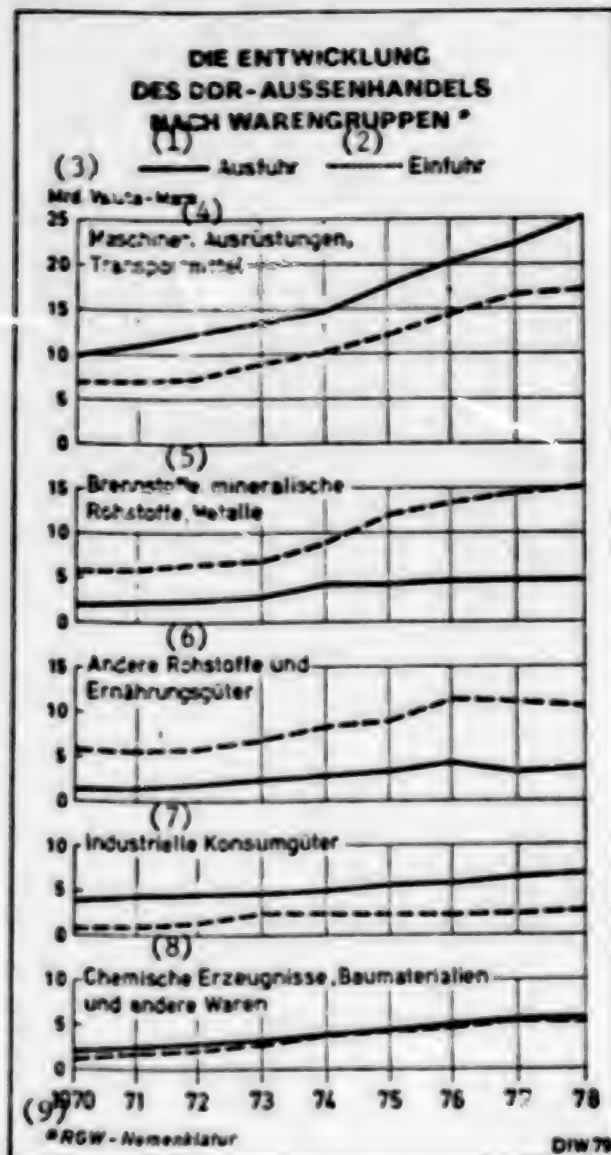
GDR statistics record a rather unsuccessful development regarding trade with the Western industrial countries (including inner-German trade). This applies to imports and exports, both; in 1978 the respective flows did not even manage to achieve 1976 levels. The lack of competitiveness on Western markets and the priority demands on the export potential by deliveries to the socialist countries must be noted as obstacles to exports, while the declining trend in imports from Western countries is clearly the result of a cut in import permits. This actual development exemplifies the basic dilemma of GDR Western trade: The fact that the virtually unlimited demand for Western products is confronted by the GDR's very limited potential for financing purchases by exports. Equally clear is the approach taken in each instance to cope with this problem: Evidently sudden emphases on exports have not enabled the GDR to either remove or lessen actual or latent imbalances between exports and imports in its Western trade. It has no choice but to curtail the import demand of industrial and foreign trade enterprises.

Due to the unsatisfactory nature of the statistical data available we must have a great deal of reservations when discussing details of the development of the GDR's Western trade. The poor standard of information, contradictions within GDR statistics and also partly divergent data generated by the GDR and its partners put a considerable strain on any appraisal of the GDR's Western trade. These divergences are particularly serious with respect to the balance of trade deficits: According to GDR statistics the accumulated deficit of the period 1970-1978 vis-a-vis the capitalist industrial countries (OECD including the Federal Republic) amounted to 27 billion M. Converting the dollar into valuta mark by way of the official ruble exchange rate, partner country statistics, however, show a deficit of only 7 billion M.

... And Small Share of Investment Goods

Detailed data about the goods structures of GDR Western trade can be ascertained only from partner country reports. More recent data largely confirm earlier results and findings: GDR imports from the OECD countries continue to be dominated by the products of the material and production goods industries (about 40 percent) and the investment goods industries (some 30 percent). By comparison consumer goods are relatively unimportant; their share is about 10 percent. Products of agriculture and the foodstuffs

Graph 2--The Development of GDR Foreign Trade by Groups of Goods*



Key:

- | | |
|----------------------------------|--------------------------------------|
| 1. Exports | 6. Other raw materials and food- |
| 2. Imports | stuffs |
| 3. Billion valuta marks | 7. Industrial consumer goods |
| 4. Machines, plant, means of | 8. Chemical products, building mate- |
| transport | rials and other goods |
| 5. Fuels, mineral raw materials, | 9. * CEMA classification |
| metals | |

Table 3--Goods Structure of GDR Foreign Trade (billion valuta marks)

(1) Warengruppen ¹⁾	(2) Einfuhr		(3) Ausfuhr		(4) Saldo	
	1977	1978	1977	1978	1977	1978
(5) Maschinen, Ausrüstungen, Transportmittel	16,6	17,2	22,4	25,4	5,8	8,2
(6) Brennstoffe, mineralische Rohstoffe, Metalle	16,5	15,1	4,6	4,7	-9,9	-10,4
(7) Andere Rohstoffe ²⁾ und Ernährungs- güter	11,0	10,5	3,1	3,5	-7,9	-6,9
(8) Industrielle Konsumgüter	2,3	2,6	6,4	6,9	4,1	4,3
(9) Chemische Erzeugnisse ³⁾ , Baumaterialien ⁴⁾	5,5	5,2	5,4	5,6	-0,1	0,4
(10) Gesamt	49,9	50,7	41,9	46,2	-8,0	-4,5

11) JGDW-Nomenklatur. -2) Landwirtschaftliche und andere industrielle Rohstoffe. -3) Einschließlich Düngemittel und Kautschuk. -4) und andere Waren.
12) Quellen: Statistische Jahrbücher der GDR; Berechnungen des DIW.

Key:

1. Groups of goods
2. Imports
3. Exports
4. Balance
5. Machines, plant, means of transport
6. Fuels, mineral raw materials, metals
7. Other raw materials and foodstuffs
8. Industrial consumer goods
9. Chemical products, building materials
10. Total
11. Footnotes: 1) CEMA nomenclature.-- 2) Agricultural and other industrial raw materials.-- 3) Including fertilizers and rubber.-- 4) And other goods.
12. Sources: GDR statistical yearbooks; DIW calculations

industry (at some 20 percent) are roughly in the middle. A comparison with inner-German trade shows that here the sector of materials and production goods is even more preeminent. This is to quite an extent due to the greater value of the GDR's iron and steel imports in inner-German trade. The situation is reversed in regard to farm products and the goods manufactured by the foodstuffs industries: Far more of these imports come from the other OECD countries than from the Federal Republic.

When we examine GDR deliveries (to the OECD and the Federal Republic), products of the material and production goods industries dominate to just about equal extents. Investment goods, on the other hand, hold a rather different status: Their share in exports to the Federal Republic of Germany amounted to only 11 percent. The GDR balances the lack of sales successes on the

West German market (especially for products of the machine construction industry) by concentrating--within the framework of inner-German trade--on industrial consumer goods, agricultural produce and foodstuffs.

Table 4--Country Structure of GDR Western Trade in 1978¹⁾

(1) Länder	(2) Einfuhr		(3) Ausfuhr		(4) Umsatz	
	(5) Mill. US-\$		(6) %			
(7) Alle OECD-Länder	1 492	1 408	2 900	100		
(8) Frankreich	167	226	393	13,5		
(9) Schweden	160	139	299	10,3		
(10) Niederlande	153	125	278	9,6		
(11) Großbritannien	91	170	261	9,0		
(12) Italien	135	102	237	8,2		
(13) Österreich	122	97	219	7,5		
(14) USA	170	35	205	7,1		
(15) Belgien/Luxemburg	70	108	178	6,1		
(16) Schweiz	110	31	141	4,9		
(17) Griechenland	38	100	138	4,7		
(18) Dänemark	83	65	148	4,4		
(19) Norwegen	26	75	101	3,8		
(20) Finnland	55	45	100	3,4		
(21) Obige OECD-Länder	122	90	212	7,6		
(22)	1) Ohne Bundesrepublik Deutschland und ohne Neuseeland.					
(23)	Quelle: OECD, Statistics of Foreign Trade, Series A.					

Key:

- | | |
|------------------------|---|
| 1. Countries | 14. United States of America |
| 2. Imports | 15. Belgium/Luxembourg |
| 3. Exports | 16. Switzerland |
| 4. Turnover | 17. Greece |
| 5. Million U.S.dollars | 18. Denmark |
| 6. Percentage | 19. Norway |
| 7. All OECD countries | 20. Finland |
| 8. France | 21. Other OECD countries |
| 9. Sweden | 22. Footnotes: 1) Excluding Federal Republic of Germany and New Zealand |
| 10. Netherlands | 23. Source: OECD, "Statistics of Foreign Trade," Series A. |
| 11. Britain | |
| 12. Italy | |
| 13. Austria | |

Consolidation by Import Restriction

The trend of GDR foreign trade this year is not easy to perceive. According to data now available from partner countries (reporting period: 5-8 months), stagnation seems to be indicated in imports from socialist countries, expansion in exports (currently 5-10 percent). This trend is largely determined by trade with the USSR: For the first time Soviet statistics report that exports to the GDR are stagnating and Soviet imports from the GDR have risen by 10 percent. Going by the monthly figures so far available GDR imports seem to have strongly expanded in trade with the OECD countries, while GDR

exports by contrast seem to be rising very little. As far as inner-German trade is concerned, the Federal German statistics report a 7 percent plus for GDR deliveries and an 8 percent minus for GDR purchases (for the months from January through August).

Table 5--Goods Structure in GDR Western Trade (percentages)

	(1) Einführen der GDR				(2) Ausführen der GDR			
	(3) OECD-Länder ¹⁾		(4) Innerdeutscher ²⁾ Handel		(3) OECD-Länder ¹⁾		(4) Innerdeutscher ²⁾ Handel	
	1976	1977	1976	1977	1976	1977	1976	1977
(5) Grundstoff- und Produktionsgüterindustrien ³⁾⁴⁾	40,2	41,1	53,8	50,6	35,4	38,5	42,4	42,8
(6) darunter: Bergbau	0,8	0,9	12,0	12,1	7,2	7,8	3,0	2,8
(8) Eisen und Stahl ⁵⁾	7,1	7,2	12,9	10,5	7,4	6,7	7,1	6,8
(8) Chemie ⁴⁾	19,8	20,1	22,0	19,8	12,5	12,8	10,0	10,3
(9) Investitionsgüterindustrien	31,6	29,3	29,3	31,4	28,4	28,6	10,5	11,0
(10) darunter: Maschinenbau	13,9	14,7	20,4	22,7	8,9	9,1	3,2	2,8
(11) Elektrotechnik	2,9	3,6	3,1	4,5	7,0	8,1	4,2	4,5
(12) Verbrauchsgüterindustrien	6,8	9,5	7,0	7,2	20,6	23,5	29,3	29,2
(13) darunter: Textilien und Bekleidung	4,2	7,1	4,2	3,7	5,7	6,2	19,4	18,9
(14) Landwirtschaft ⁶⁾ und Ernährungsgüterindustrien ⁷⁾	21,3	19,2	8,6	9,6	14,9	8,4	17,2	16,2

(15) 1) Ohne Bundesrepublik Deutschland. - 2) Bundesrepublik Deutschland einschließlich Berlin(West). - 3) Einschließlich Bergbauerzeugnisse. - 4) Einschließlich Kunststoffherzeugnisse sowie Gummi- und Asbestwaren. - 5) Einschließlich Gießereierzeugnisse sowie Erzeugnisse der Ziehereien, Kaltwalzwerke und der Stahlverformung. - 6) Einschließlich Erzeugnisse des Gartenbaus sowie der Forst-, Jagd- und Fischereiwirtschaft. - 7) Einschließlich Tabakwaren.

(16) Quelle: Berechnungen des DIW nach den auf Partnerlandangaben beruhenden Daten des Bundesamtes für gewerbliche Wirtschaft.

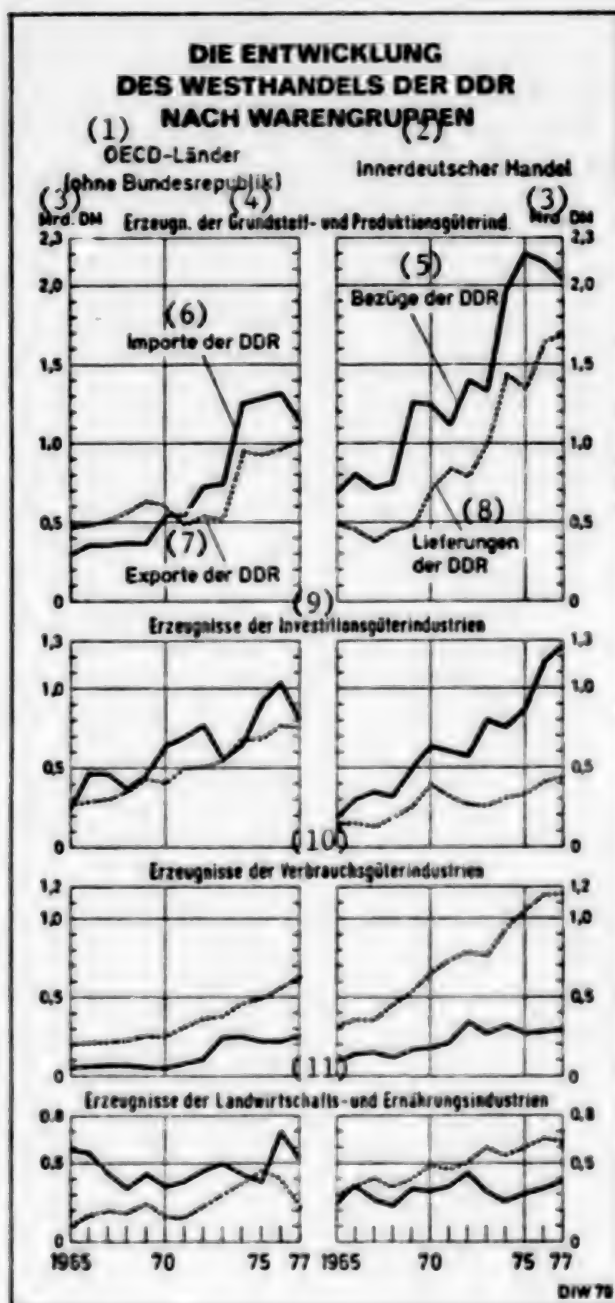
Key:

1. GDR imports
2. GDR exports
3. OECD countries
4. Inner-German trade
5. Material and production goods industries
6. Including: Mining
7. Iron and steel
8. Chemicals
9. Investment goods industries
10. Including: Machine construction
11. Electrical engineering
12. Consumer goods industries
13. Including: Textiles and clothing
14. Agriculture and foodstuffs industries
15. Footnotes: 1) Excluding Federal Republic of Germany.-- 2) Federal Republic of Germany including West Berlin.-- 3) Including mining products.-- 4) Including plastic products, rubber and asbestos goods. 5) Including foundry products as well as products of wire factories, cold rolling works and steel forming.-- 6) Including horticultural produce and the products of forestry, hunting and fishing.-- 7) Including tobacco goods.

[Key on following page]

16. Source: DIW calculations based on data furnished by the Federal Office for Trade and Industry derived from partner country reports.

Graph 3--The Development of GDR Western Trade by Groups of Goods



Key:

1. OECD countries

2. Inner-German trade

7. GDR exports

8. GDR deliveries

[Key continued on following page]

- | | |
|---|---|
| 3. Billion D-marks | 9. Products of the investment goods industries |
| 4. Products of the material and production goods industries | 10. Products of the consumer goods industries |
| 5. GDR purchases | 11. Products of agriculture and the foodstuffs industries |
| 6. GDR imports | |

If these trends now discernible were to persist throughout the year, we might sketch the probable foreign trade development as follows: In its 1979 intra-Bloc trade the GDR appears to be trying to reduce the export gap--at least in the exchange of goods with the USSR. The same applies to the goods traffic with the Federal Republic. In both cases the intention seems to be to pursue a restrictive import policy and increase export efforts. Concerning trade with the other OECD countries it currently looks as if the GDR may be inclined to embark on new borrowing by failing to cut import demand or to impose cuts to a reduced extent only. Though such behavior would run counter to that of last year, it seems plausible and economically justified in view of the unwavering readiness of Western countries to extend more credit and also in view of the continuing worldwide inflation which benefits borrowers.

The overall foreign trade situation of the GDR is now worse than before. This has several reasons: Prices, especially for raw material imports, have continued to rise in 1979. That holds good for the intra-Bloc trade where, due to the agreed price setting formula, the 1978 price level has replaced the 1973 level in the average price setting. At the same time it also applies to the other foreign trade of the GDR, because a direct effect proceeds from the actual price development on the world markets. We cannot really suppose that the GDR might succeed in enforcing corresponding price increases for its finished goods exports. The inescapable consequence seems to be another deterioration in the terms of trade for the GDR in 1979 also.

The GDR's accumulated deficit vis-a-vis other countries is greater in 1979 than a year ago. No resolution of this problem by way of a major export offensive is in sight. For reasons of demand (slower economic growth in the customer countries) and supply (problems of domestic goods availability) we must assume that the GDR will find it increasingly difficult to raise the rate of growth of exports. Furthermore, new price rises for raw materials are pending for the GDR, and the country can therefore escape an even worse imbalance in its balance of trade only by adopting restrictive import policies. It will surely be possible to avoid deficits of the dimensions incurred in 1976 and 1977; at the same time, though, it will be necessary for the GDR to accept the inevitable economic disadvantages: The lack of necessary or desired import goods means that growth and consumption will have to be scaled down.

These policies shift the role of foreign trade as a growth factor to the background. This holds true especially for imports. We may expect that, not too long hence, difficulties will arise therefrom with respect to the

expansion of the export offer. Foreign trade, therefore, is likely to expand less than would be desirable.

FOOTNOTES

1. According to GDR foreign trade reporting, that is including inner-German trade.
2. According to detailed data on price trends this decline is likely to have amounted to up to 5 percent.
3. The statistical unit of account by which the GDR has reported its foreign trade since the mid-1960's. Its conversion rate derives from a fixed relation to the transferable ruble. So far this ratio has been constant and amounted to $R1 = 4.87$ valuta marks. The conversion rate with Western currencies fluctuated with the parity changes between the ruble and the convertible currencies; the 1978 ratio was $DM0.634 = 1$ valuta mark.
4. Disregarding foreign exchange rate changes and changes in statistical definition, partner country reports on exports to the GDR (plus inner-German trade) show a rise of about 5 percent (in nominal terms).
5. See "Effects of the new Foreign Trade Prices in CEMA," editor Jochen Bethkenhagen and Heinrich Machowski, DIW-WOCHENBERICHT No 17/1975.
6. See "GDR Confronted With Further Increasing Foreign Trade Burdens," editor Horst Lambrecht, DIW-WOCHENBERICHT No 47/1977.
7. Jochen Bethkenhagen/Horst Lambrecht: "Growth Promoting and Growth Obstructing Effects of the GDR's Integration in CEMA," "Thirty Years GDR. Twelfth Congress on the Status of GDR Research in the Federal Republic of Germany. 5-8 July 1979," DEUTSCHLAND ARCHIV, special issue 1979, pp 189 ff.
8. For details see "On GDR Western Trade," editor Horst Lambrecht, DIW-WOCHENBERICHT No 39/1975. See also Maria Haendcke-Hoppe, "GDR Foreign Trade Statistics and Their Informational Value," FS-ANALYSEN No 3/1978.
9. In view of unlikely sounding reports about the foreign trade of some Western countries it may be assumed that this figure falls short of the actual deficit. Even so it is impossible to explain the full dimension of the divergence from GDR statistics.

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CHANGES IN FOREIGN TRADE REGULATORS DESCRIBED

Budapest FIGYELO in Hungarian No 46, 14 Nov 79 p 7

[Article by Lajos Bernyi: "Regulators in Foreign Trade"]

[Text] An important feature of the foreign trade regulators to be introduced in 1980 is the fact that they are built on a price system which creates a direct long term relationship between non-ruble foreign trade prices and Hungarian producer prices, i.e. between the judgment of foreign markets regarding our products and profits realized through completed sales.

The fundamental principle of the producer price mechanism is the transition from the present, mostly government regulated, prices to free prices in the case of raw and base materials as well as large volume semifinished products. Producer prices will closely follow price changes in foreign markets. In practice, this means that domestic users will immediately perceive when the price of a given product increases or decreases in world markets; foreign market price changes will no longer be cushioned by financial bridges. (Enterprises will be able to set up differential reserve accounts to cushion world market price fluctuations and compensate for transitional price movements, using their own resources with no budgetary support.)

Prices and Exchange Rates

Obviously, this means that in some cases the price of important base materials may be subject to change, possibly several times within a calendar year. This is a significant departure from the present system which kept the price of basic raw materials unchanged for long periods; adjustment to the international market situation took quite a long time and was carried out as part of a price reorganization for an entire sector.

The producer price reorganization represents the concluding phase of the process whereby the price system of the Hungarian economy adjusted to the world market price explosion of 1973-74. The price changes to be introduced in 1980 will substantially increase the price of raw materials and lower the the price of finished products, essentially reflecting, in the area of domestic prices, the world market trends toward more expensive raw materials and relatively less valuable finished products.

The producer prices to be introduced on 1 January 1980 in the processing industry contain profits proportional to the international market judgment regarding our exports. This is important from the standpoint of foreign trade, because in this way the price system ensures that enterprises which are more efficient by international standards will be able to obtain higher profits and, therefore, more resources for development and sharing. It is important to make sure that this relationship existing at the start between producer prices and export prices is preserved and continued on an institutional basis.

This, of course, implies that the importance of foreign trade pricing activity will increase substantially in the period after 1980. Purchases will figure directly in the costs of user enterprises. The results of export pricing activity will be apparent to enterprises in the profitability of their total sales, including domestic sales.

I think that the producer price reorganization will help in providing incentives for foreign trade and industry toward more favorable foreign trade prices. It is clear that this process demands more effort on the part of both than we see at present. Foreign trade enterprises must have the kind of price documentation regarding high volume products which compares Hungarian export prices to the competition with the highest price levels. The analysis of price documentation should reveal the reasons why our export prices lag behind the competition and the possible ways of eliminating or at least reducing these differences.

Part of the price differential is the result of objective factors, e.g. customs disadvantages or physical distance from the market. The remainder, however, is due to subjective factors; among these are missing delivery deadline, insufficient field service or quality problems. These differences can and should be eliminated. Foreign trade and industrial enterprises must formulate joint action programs containing the tasks of both parties.

Under the new price mechanism, producing enterprises will naturally require more detailed and systematic analysis and information from foreign trade enterprises, not just for the purposes of ongoing business activity but also for the formulation of long range production policy. It should be stressed, however, that information must flow both ways: trade enterprises must also know more about changing production conditions as well as short and medium range plans.

The chief goal of the changes in the system of foreign trade regulators is to improve our foreign trade balance, strengthen export oriented production, provide incentives for increased currency receipts, more economical operations and rational savings of imports.

The commercial exchange rate in non-ruble trade will be 34 forint/dollar, starting on 1 January 1980. Enterprises will receive differential commercial producer tax rate reimbursements on their exports; the size of these reimbursements is 10 percent of export sales receipts calculated on the basis of the commercial exchange rate. In the clothing industry the rate is 16 percent. Agriculture and the food industry will receive export subsidies in addition to reimbursements; together these will add up to 25 percent. For a transitional period reimbursements have been suspended in metallurgy, milling and the vegetable oil industry.

The chief goal of foreign trade regulations in the ruble accounting area is to provide incentives for enterprises to carry out the trade targeted by our international obligations within an economically sound product structure. In view of the feature of CEMA price calculations whereby real world market price relationships are built into contractual prices gradually and slowly, this area requires export incentives just as much as the curtailment of certain excessively large extra incomes.

The chief new element of import regulation is precisely the producer price system which is charged with the task of using imports in a rational and thrifty fashion through continuous adjustment to world market prices. In accordance with our international obligations, our customs structure will remain an important element in our import regulations.

Lower Fees and Price Differentials

An important requirement of the 1 January 1980 modification of the regulators relating to foreign trade enterprises is the strengthening of incentives toward more efficient work. At the same time, we must ensure that the differences between foreign trade regulators and the economic regulators applying to the national economy as a whole are no more extensive than absolutely required by the special features of the activities of foreign trade enterprises.

Modified regulators must be more effective in promoting stronger bonds of common interest between foreign trade and producers, more active and flexible international marketing operations and further improvements in the quality of foreign trade pricing activity. There will be substantial changes in the regulations concerning foreign trade enterprises with regard to price regulation and taxation.

As a result of the price reorganization, commissions and price differentials will be reduced by almost 60 percent starting on 1 January 1980. They will cover real costs only and will reflect average profit rates for the national economy. Rates vary among relationships and product groups; they reflect realistic cost requirements. Cost sensitivity is increasing and savings must increase. The need for more intensive pricing activity is increasing, since profits may be obtained primarily through price gains. This is behind the price structure of new commissions and price differentials. Although commissions and price differentials belong in the realm of free prices, increases are subject to reporting in order to ensure that profit rates do not increase unjustifiably.

The rules for the division of price gains and the profits obtained by business companies and joint ventures remain unchanged in order to preserve strong incentives for optimal pricing and joint interests.

Coverage for Risktaking

There will be substantial changes in the system of taxation:

--Price measures make it possible to eliminate the commercial tax almost completely;

--The linear profit tax will be 5 percent higher in the foreign trade sector than in general, i.e. 50 percent as compared to 45 percent. However, this extra 5 percent may be transferred in the form of a tax exemption to deposits in the Inter-Sector Development Association to be established in 1980;

--The formation of compulsory reserve funds is identical to that required by general regulations, i.e. 15 percent. However, in foreign trade there is no upper limit on the reserve fund in order to strengthen risktaking and the spirit of enterprise in foreign trade and to provide the financial margins for them. For the same reason, use of the compulsory reserve fund is less restricted than in the economy as a whole;

Special possibilities for the use of this fund are as follows:

--To provide all or part of the resources required for loans to domestic producer enterprises participating in an economic association;

--Capital payments or deposits to the Inter-Sector Development Association;

--To provide fixed and working capital to foreign economic ventures or Hungarian ventures with foreign capital participation; in the case of the inclusion of a Hungarian producer enterprise among the founding members, to advance the capital share of the producer enterprise;

--To provide financial support for export main contractor activity;

The possibility for creating so-called separate reserve funds will continue to exist. This is to improve the economic security of enterprises by putting the income of exceptionally good years in reserve.

The rate of progressive tax on the share fund is close to, but somewhat more stringent than, the general regulations.

The system of wage regulations applying to foreign trade enterprises will remain unchanged, i.e. relative wage level regulations tied to indicators will continue in effect for enterprises trading in tangible goods while central wage level regulations will apply to those providing agency or service functions.

Further development of the system of relationships between foreign trade and producers is increasingly supported by financial means. The size and purposes of the development fund of foreign trade enterprises will in the future promote the expansion of modern contractual relationships by creating an opportunity for the strengthening of a spirit of enterprise supported by active financial means.

The separate and relatively fragmented development funds of foreign trade enterprises should, at least in part, be centralized in the interest of more efficient utilization. This is accomplished by the formation of the so-called Inter-Sector Development Association created jointly by foreign trade enterprises as a separate legal entity (deposit corporation).

The association provides the ability for foreign trade to take part in the implementation of investment and development projects aimed at the creation of selective, economical convertible export stocks. It may also be useful in investments aimed at infrastructure improvements which increase exporting ability (e.g. construction of storage facilities, modernization of packaging) and can create the financial basis for domestic and foreign economic associations and ventures.

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CHANGES IN ECONOMIC REGULATORS ELUCIDATED

Budapest ~~MAGYARORSZÁG~~ in Hungarian No 48, 2 Dec 79 p 25

[Article by Ivan Wiesel: "New Regulators"]

[Text] The Bible of Economic Operation--Allotment of State Funds

In the first week of November a long, snake-like queue of people stood in front of the Bajcsy-Zsilinszky street store where official publications are sold, and at the other places which sell magazines, signs were posted in big letters: "We do not sell MAGYAR KOZLONY." This great amount of interest was manifested towards the 1 November issue of MAGYAR KOZLONY, because the new economic regulators to take effect on 1 January 1980 were published in it. This document--the "bible" of the economic operation of enterprises--is a massive volume of over 200 pages, in which about 60 regulations by the government, the ministries and top level national authorities can be found.

Stricter Conditions

Modification of broad areas of the economic regulators is closely related to that effort of the economic policy centered around the reestablishment of economic equilibrium. "But the economic equilibrium can be reinstated only--Istvan Huszar, member of MSZMP's Politburo, deputy chairman of the Council of Ministers established in his statement given to [the weekly magazine] HETI VILAGGAZDASAG--if we increase the ultimate domestic consumption, and the population's consumption and investments at an even slower rate than the moderately increasing national income just barely or not at all." The economic regulators which form a bridge between the goals contained in the national economic plan and the economic operation of the enterprises must conform to this.

Studying the economic regulators, the following general characteristics can be observed:

--the conditions of growth are more strict in all areas of economic operation, this refers equally to regulation of enterprise income, wage regulation, development, material management, etc.;

--in the coming time period the economically growing enterprises and cooperatives will receive more advantageous growth opportunities than the uneconomical ones which with the increasing differentiation will get into more and more disadvantageous situations, which must provide them with the incentive to do a better job of opening up their production reserves;

--international competitiveness is the main measure of the differentiation; prevalence of this is expressed in the new producer prices, for 70 or 75 percent of which the world market price is considered to govern;

--the game of trying to get as much as the other guy will decline to a large extent in all areas of economic operation, which will definitely manifest itself in the wage regulation also; wages depending on performance will be wide spread and will become controlling;

--normativity in regulating will become stronger, which means that the number of exceptions will be less and less, the sphere of subsidies will decrease;

--expansion of economical export will be an emphasized interest of the economic operating units in the future also.

Price is the most general and most natural economic regulator. The level of prices, the price ratios of products influence the extent and also the structure of consumption. The price-organizing process now under way, one part of which was the consumer price increase of 23 July 1979, and which as of 1 January 1980 will also extend over a broad area of producer prices, is a modification of such proportions which has not occurred since 1968.

Without desire of being complete, the most important directions of the present price changes can be summarized in the following:

There is a desire to create a better link between consumer prices and the expenditures, which by means of significant decreases in the consumer price subsidies is aimed at increasing the efficiency of consumption. Undoubtedly the general increase of consumer price level together with the small rise in real wages will temporarily slow down the increase of the standard of living. This is one of the temporary accompaniments of creating economic equilibrium, which can no longer be avoided.

It is also important to create a more organic linkage between producer prices and the foreign trade prices. The expected effects of this are: profits will develop not on the basis of cost but of international judgment of values; approaching the internationally competitive prices, the prices will make it possible for international competitiveness to be the yardstick of economic

efficiency; this method will make it possible for the prices to also create selective, differentiated growth among the enterprises and products; there also is no doubt that this method of forming prices will supply the incentive to be frugal with imports.

Prices and Their Control

The circle of goods belonging into the so-called free price category will expand, and among the producer prices only those of the energy sources, and of electrical energy will be in the group of fixed prices. According to the plans the free price form will also be broader in consumer prices, and will cover 60 percent of the products.

Broader application of freer forms of the price mechanism will place large tasks on the battle against indecent competition, on more intensive price control.

Income regulation, which is closely linked to the all-time price system, is the basic financial method of economic regulation, because the size of the incomes depends also on the forming of prices.

The most important directions of modifying the income regulation of enterprises are: the contribution to commitment of means will be terminated, wage subsidies will be decreased, the level of general (linear) taxes will increase, the extent of municipal and town development contributions will go up, in general the subsidies by the state and the amortization discounts will decrease. All these changes will decrease the net profit of the enterprises, modify the ratios of distributing the income between the state and the enterprise, and more than 60 percent of the net profit of the enterprises will be centralized.

Developing the regulation of income in such a direction is justified by the fact that in the future the modification of the economic structure will have to be accelerated and this requires financial coverage; by eliminating unprofitable production a high degree of regrouping will take place, which can be accomplished only by way of higher centralization of the central financial means. It is also a fact that the budget is an important element of the economic equilibrium, the deficit of which must be decreased from year to year, or eliminated.

There is no question that these restrictions may put certain enterprises into difficult situations, our society must face this even if temporarily the personal incomes will also decrease. We may consider such consequences of the differentiation also as the price of faster and better balanced progress to come later.

Changes in the economic regulation which affect most those who live on wages and salaries, are: the modifications in the wage regulators. The most important "hardening" in this area is that beginning next year, there must always be performance results at the enterprises behind any wage increases. In practice, the automatic wage increases will be terminated, more precisely they will be decreased to a minimum.

In this spirit, in the future the wage-fund management which depends on the enterprise's performance will prevail in broader and broader areas. One of the important characteristics of this is that part of the wages which remain unspent due to cutbacks in employment can be used for wage raises. This makes it possible for the wage levels to also differentiate between enterprises. The same format of wage regulation applies to all enterprises which belong to the same branch, thus where the work is more productive, the wages can also increase more.

The progress of tax increases accompanying the wage will also increase, which limits the spending of purchasing power in harmony with the efforts to reestablish the equilibrium.

Those enterprises which in the earlier time period accumulated wage reserves will be allowed to spend 1 percent of it annually to increase their wage levels. This will make it possible for them to solve rational organization of manpower management without shocks.

In the future the 6-day profit sharing--which until now was insured for all enterprises--will be eliminated; from now on profit sharing can depend only on the enterprise's profitability.

Financial regulation of investments will change in the direction of where in allocating the available means the viewpoint of profitability should prevail more definitely than before. Therefore in the future the cost-free investment assistance will be terminated; thus the enterprises will not be able to develop their production at the expense of the taxes on their profits, but will have to take out loans from the state, at the judging of which the profitability requirements will be weighted more heavily. The enterprises will have to repay their loans from the amortization, thus acceptance of the burden will be divided between the state and the enterprise.

Allotment of state funds is a new form of financing, which the enterprise can use when it has exhausted its own credit resources and the ones built on this, but it has additional safe opportunities open to it for profitable development; in this case it can submit a request of such character to the State Development Bank [AFB], then if this loan is also awarded to it, this award must also be paid back in 4 years in the form of a share of profits.

Payments According to Bills

In the interest of the scheduled accomplishment of the investments, the system of financial accounting for construction and for the investment process will change as of next year. The essence of this is that partial and stage completion of the contracts will also have to be accounted for separately. By this the party placing the order will have the opportunity to compare performance with contractual obligation, and will have the opportunity to object to the payment of a bill. This regulation is expected to improve the performance of contractual jobs.

In general the regulation will slow down the demand for investment, improve harmony in this area also, but will not hinder, on the contrary it will provide more incentives than in the past for efficient investments which are also rapidly recovered, particularly for those which result in the expansion of competitive export merchandise basis.

Besides the correlations selected from the document, more could be said about the regulations which will bring new elements into the areas of foreign trade, agriculture, the construction industry, and of services. But there is no doubt that the regulatory practice which will go into effect on 1 January 1980 will place greater requirements not only before the economics expert but also before our society as a whole.

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ENTERPRISE INCOME REGULATING SYSTEM VIEWED

Budapest NEPSZABADSAG in Hungarian 14 Nov 79 p 10

[Article by Zoltan Filipzsky, department chief, Ministry of Finance: "Concerning the Enterprise Income Regulating System"]

[Text] The government decree concerning the enterprise income regulating system and the ministerial decrees arranging for implementation appeared in the 1 November 1979 issue of MAGYAR KOZLONY. It is worth while on the basis of a study of these decrees, and in the interest of encouraging successful practical implementation, to review in these columns the more important interdependencies and the more essential changes. (We will return in the weeks ahead in our column to a review of other important questions of the 1980 economic regulators, including the regulating system for agricultural operations.--The Editors.)

The starting basic principle of the Council of Ministers decree is that the distribution between the state and the enterprises and cooperatives of the net income generated in the producing branches should be regulated in accordance with the requirements of the balance of the people's economy, taking into consideration the resources needed for independent enterprise management. The enterprise income regulating system, coordinated with the comprehensive 1980 producers price adjustments, will do this by substantially changing the structure of net income and transforming the methods of centralization.

More Uniform Requirements

What are these changes?

The charge on assets, which had been calculated in producers prices as a cost, will be abolished on 1 January and the wage contribution will be decreased from 35 percent to 24 percent. The latter must be calculated and paid in its entirety as a social insurance contribution since the wage tax will be abolished too. The new regulations invalidate the earlier decrees concerning domestic trade taxes and production taxes for industrial enterprises and construction industry enterprises because the use of these

distorted the economic achievements of the enterprises affected. The function of the production tax to be a tool for drawing off large incomes has essentially ended and this tax will function in only a narrow sphere as a supplementary financial tool in areas where incomes which can be centralized to the benefit of the state budget arise independent of the efforts of the enterprises as a result of unique local conditions.

Thus management organizations doing construction industry planning or organizing and carrying out investments will continue to pay production taxes in proportion to wage costs; technical research and development institutes working in accordance with an enterprise management system will continue to pay production taxes for fees received for their industrial and service activity; and enterprises providing communal and public services will continue to pay production taxes for their industrial and construction industry activity.

The structure of net income is also changed by the fact that there will be a significant reduction in import price supports, production price supplements and grants. There will be some reduction in the sphere of concessions and relief from the obligation to make payments into the budget (retaining amortization and profit taxes).

Beginning 1 January 1980 the differential producers turnover tax will function as a new element in net income; this must be paid in the event of the import, trade in or use of primary materials or semi-finished goods defined in the regulations. The amount of the tax is defined as follows: 1. The difference between the value of certain primary materials (semi-finished goods) imported into the country within the framework of an inter-state contract and the domestic price as established in accordance with valid price formation regulations; and 2., in the case of selling primary materials (semi-finished goods) produced domestically, a proportion of the price income, said proportion to be defined by the minister of finance. If the producing enterprise uses its own production the percentage key for the tax in question is the same as if it had sold the primary material (semi-finished goods).

The proportion of income connected with the trading, use or consumption of goods and product will increase in the composition of net income while the proportion of income created in production will decrease. Profit will become the determining factor in the net income created in the area of production. An increasing role will be played by the previously mentioned differential producers turnover tax and the turnover tax incurred in consumption. A rebate on the differential producers turnover tax, calculated on the basis of the net foreign exchange income of the enterprises, will be of special significance in the material incentive of the enterprises. The magnitude of this will generally be 10 percent in the case of non-ruble accounting export (16 percent in the clothing industry for export using their own materials). Rebates on the differential producers turnover tax will not be made in the ferrous metallurgy branch until further measures are taken.

The changes taking place in the structure of net income coupled with the greater demands expressed in the new producers prices will make the enterprises (and cooperatives) more interested in profitable management. On the basis of the world market evaluation reflected in foreign economic contacts the incentive effect of income regulation will be realized in such a way that the enterprises will be able to expand their own resources which can be turned to increasing personal incomes and development of the enterprise thanks to the profit achieved, or the increase therein, under more difficult circumstances. They can thus create the material conditions for their growth.

The income regulating system forming the economic conditions for enterprises (cooperatives) working in a profit interest system pose more uniform demands than before with prescriptions which are generally valid. In certain well circumscribed cases--as planned intervention by the state--justified support and payment concessions will be offered for the indispensable renewal or development of activities for which the financial conditions cannot be created by price increases because of social policy considerations.

The enterprises--with the exception of cooperatives, cooperative enterprises and special branches defined in the regulations--will continue to be obliged to pay into the state budget 40 percent of the depreciation write-off calculated for fixed assets (machines, buildings, etc.). Enterprises and cooperatives--as I said at the beginning of the article--will pay a social insurance contribution corresponding to 24 percent of the wages paid.

The decree concerning use and usufruct fees for state premises will increase by 50 percent the fees established in 1976 in order to encourage more rational management of the premises by enterprises and cooperatives. The magnitude of the increase follows the increase thus far in the prices of the premises.

Profit Tax and Profitability

Since the charge on assets and the wage tax constituted thus far the controlled incomes of the councils care had to be taken to replace them in part following the abolition of these sources. The income regulating system does this by increasing the magnitude of the urban and community contribution from 6 percent to 10 percent.

The profit tax will continue to consist of two parts, the general profit tax and the obligation to pay a progressive profit tax burdening the generation of the shares fund. The general profit tax will increase from the present 40 percent to 45 percent--in the method previously calculated.

The magnitude of the profit tax is smaller in areas oriented toward profit in only a limited way and this will be regulated in a way differing from the general way. Thus it will be 40 percent for enterprises providing communal and public services and 30 percent for health and cultural enterprises. It will be greater for foreign trade enterprises, which must pay a 50 percent general profit tax.

The tax table defining the magnitude of the progressive profit tax will change substantially. At present the magnitude of the tax depends only on the total shares fund as compared to wage costs. According to the new prescription, beginning 1 January 1980, the magnitude of the progressive tax will be modified depending on profitability in order to benefit enterprises which are more profitable. The more profitable enterprises can generate a tax-free fund of a greater proportion up to the limits defined in the tax table than can the less efficient. To put it differently, the tax burden is smaller for a shares fund of the same size and this increases the possibility for generating a developmental fund. (If, for example, an enterprise of average profitability and one with outstanding profitability both generate a shares fund proportional to 8 percent of the wages the former pays a progressive tax which is 1.3 times greater. The enterprise with outstanding profitability can put a sum corresponding to the extra tax in question into its developmental fund.)

In areas which are regulated in a way differing from the general way the magnitude of the progressive tax burdening the shares fund will continue to depend, as before, on the sum of the shares fund as compared to wage costs. Taking into consideration unique circumstances the regulations set the wage proportional shares fund which can be generated tax-free at different levels. Technical research and development institutes working according to an enterprise management system can generate a tax-free shares fund of up to 4 percent of the wage costs, health and cultural enterprises up to 2 percent of the wage costs. Foreign trade enterprises cannot generate a tax-free shares fund at all.

Enterprise Interest Funds

Enterprises and cooperatives working in a profit interest system are oriented toward profitable management not only by the requirements expressed in tax and other budget payment obligations. The generally valid regulations pertaining to generation and use of enterprise interest funds (reserve funds, developmental funds, shares funds) also stimulate them in this direction.

The distribution system, based on independent enterprise decision, for the generation of the developmental and shares funds will continue to be valid after 1980 (this is influenced by the method of taxation and it is controlled by the order in which payment obligations are fulfilled). The rules for generating and using the developmental fund will not change, with the exception of prescriptions pertaining to the financial settling of losses, of which we will speak later. There will be a change in the obligatory order of utilization in that the obligation to fill the circulating fund takes precedence over payment obligations in regard to other enterprises and organs. In addition to the already mentioned modification of the tax table defining the calculation of the progressive tax burdening the generation of the shares fund it is an important change that the possibility of generating a guaranteed shares fund corresponding to 6 days wages will end. (If the fund generated is not sufficient then payments to reward labor competitions which had burdened the shares fund can be covered from the reserve fund, with a 2 year repayment obligation.)

The rules for generation and use of welfare and cultural funds are unchanged. During the discussion of the draft law concerning the state budget the Council of Ministers will decide how much, among the various expenditures, can be set aside per capita for the generation of the welfare and cultural funds in 1980--and, of course, in the years to follow.

The enterprise income regulating system raises the standard of efficiency to a higher level. As a result the income situation of the enterprises will necessarily become differentiated. Conditions will be more difficult for enterprises working with weak efficiency and they will be more favorable for enterprises which are managing well and exporting economically. The enterprises and cooperatives will have the opportunity--taking into consideration credit conditions too--to take responsible, independent initiatives which will be advantageous to themselves and to the people's economy. This will make possible dynamic development for enterprises which are managing more profitably than the average.

The differential producers turnover tax rebate will provide a favorable opportunity for enterprises which are economically exporting competitive goods because if they achieve foreign exchange income with expenditures smaller than those calculated at the commercial rate of exchange, or an achievement approaching this, then they get extra profit. Enterprises managing profitably also get into an advantageous situation from the viewpoint of the projected tax burden for shares fund generation. The credit capability of these enterprises will be stronger also.

Security, Flexibility

Regulation will unambiguously prompt enterprises with low profitability to reduce and gradually eliminate uneconomical activity and increase the ratio of modern, competitive production. These must overcome their disadvantages and their financial difficulties primarily by relying on their own strength because in general they cannot count on supports or concessions. They must use primarily their reserve funds to settle losses already incurred. If the deficit can be regarded as temporary and if conditions for profitable management can be created in a foreseeable time the bank will loan the reserve fund to be generated in the future to settle the financial affairs. If the enterprise has no realistic program to improve management it must use finances generated in various enterprise funds not yet committed to settle the deficit.

The income regulating system also aids management security by increasing the role of enterprise reserves. This enterprise reserve system has three elements: the obligatory reserve fund, the segregated reserve fund and the price difference reserve funds.

The obligatory reserve fund must be generated from the profit remaining at the enterprise as reduced by the general profit tax. Its magnitude will be 15 percent as compared to the present 25 percent. If the enterprise is

burdened by a repayment obligation due to use in previous years this must be satisfied in addition to the above mentioned reserve generation. The upper limit of the reserve obligation will change too, more precisely it will decrease as compared to the present. (The reserve fund generated prior to 1980 must be handled separately; it cannot be counted when setting the level to be filled in that year.)

The regulations which will be valid after 1 January 1980 make the rules for using the obligatory reserve fund more flexible than before. According to the new regulations--maintaining the obligatory order for utilization--the reserve fund can be used with a 5 year repayment obligation to counterbalance a temporary drop in achievement or to supplement developmental and shares funds being generated from profit up to the magnitude of the decrease as compared to the level of the preceding year. In the course of calculating achievements for 1980 this rule can be used to a limited extent, up to 80 percent of the drop in profit incurred.

The reserve fund can also be used, again with a 5 year repayment obligation, to fill the circulating fund needed for the over 15 percent price income increment if the marketing price income of the enterprise increases at a rate exceeding 15 percent. In addition, the reserve fund can be used if the marketing price income did not increase to the designated degree but if convertible export therein did expand more than 15 percent, to fill the circulating fund belonging thereto.

In the course of actual operation the 1980 modification of the enterprise income regulating system will be full of contradictions and tension. Still, we can look forward with the expectation that the modernized regulation will make a fundamental contribution to achieving the main goals and tasks of economic policy.

8984

CSO: 2500

WAGE REGULATION MODIFICATIONS NOTED

Budapest FIGYELO in Hungarian No 46, 14 Nov 79 pp 1, 4

[Article by Dr Laszlo Pongracz: "Modification of Wage Regulation"]

[Text] The regulations concerning a further development and modernization of the economic regulator system appeared in the 1 November issue of MAGYAR KOZLONY. According to these the system of enterprise wage and earning regulation will change in 1980 too. Many critical observations have been made in recent years of the wage regulation now valid. In the course of the work aimed at modernization we had the important task of correcting the deficiencies criticized, as well as carrying out the tasks following from economic policy goals.

The majority of the critical observations connected with the wage and earning regulation system emphasized that regulation did not pose suitable requirements for the enterprises and thus did not sufficiently encourage more efficient work. This criticism must be regarded as just but with this observation, that incentive aimed at increasing efficiency is not the exclusive task of wage and earning regulation but of the entire system of economic guidance and economic regulation. Wage regulation in itself, without the other elements of economic regulation, cannot fulfill this requirement but neither can the other elements of regulation do without the positive effect of wage regulation in carrying out this task.

The laxity of the requirements expressed in the present wage regulation and the proliferation of direct and indirect supports offered to the enterprises evened out the rate of growth in wages and more significant differences did not develop in the rate of growth of wages. An enterprise working with high efficiency or increasing efficiency dynamically could not realize substantially greater wage increases than those working with low efficiency. So the first order requirement to be made of the modernization was that regulation should make the possibilities for wage increases more consistently dependent on the efficiency of economic work, on the level of efficiency and its dynamics of growth. The other deficiency of regulation was that it did not sufficiently stimulate rational management of live work, thrift with personnel, and thus did not adequately aid an elimination of the lack

of balance in employment and the flow of manpower to more efficient areas. The modification of wage regulation is aimed primarily at the liquidation or moderation of these deficiencies.

Differentiation

The wage regulation going into effect next year ties an increase in wages to requirements in every area of the enterprise sphere. Wage bill regulation will be used in the widest sphere. The wage bill which can be used depends on an index which reflects the efficiency of enterprise work and changes therein. This method will make the enterprises interested in carrying out their tasks with less live work and with better utilization of the work time base. The characteristic aspect of wage bill regulation is the possibility of using all of the money saved by decreasing personnel, up to a certain limit, to increase the level of wages. And this coincides with the aspiration or personal interest of the employees to raise their wages.

The principle of normativity is realized in the requirements constituting the conditions for wage increases. The same form of wage regulation applies to enterprises belonging in the same sub-branch or special branch. Differences can be found between forms of wage regulation in different special branches or sub-branches, however, because of local peculiarities. What is basic in the case of relative wage bill regulation or wage bill regulation tied to performance requirements is increasing the wage development index (that is, increasing profit) or decreasing personnel or the combined fulfillment of these two tasks. That enterprise which significantly increases the effectiveness of work can obtain material resources by virtue of which it can dynamically increase the wage development index without being forced to decrease personnel. The enterprise which cannot increase efficiency--if it was not highly efficient in the first place--will be forced to discover its superfluous personnel and get rid of them because only in this way can it achieve a wage development similar to enterprises which are increasing their efficiency dynamically. It would not be proper to demand yearly improvement in performance from those economic units where there is no profit interest or where this can be realized in only a limited way. In these areas wage regulation requires that the enterprise create cover for the centrally determined wage bill increase without decreasing profit.

The interest in reducing personnel surpluses is kept within relatively narrow limits by that prescription of the present regulation according to which a progressive payment must be made from the shares fund for any wage level increase over 6 percent. The greatest problem is not that a "decision point" is thus built into the regulation and the enterprise must weigh whether it is better, at the price of a certain payment, to convert a part of the shares into wages and thus achieve a higher base or to strive for a larger shares fund; this 6 percent has become a limitation on material

incentive because its magnitude fell very close to the average increase in the wage level. But wage level regulation cannot be abandoned even in areas included in wage bill regulation. It is justified to permit the enterprises to further increase the wage level above a certain limit only if definite extra requirements are met. As a general rule the payment obligation will be linked to an increase of the wage level above 9 percent but, deviating from prior practice, this will not be done according to progressive keys, rather a uniform 150 percent payment will burden the higher wage level. Without this rule enterprises starting from a very low efficiency level, thus realizing a great development as compared to themselves, would have an unjustified advantage as compared to those which would find it more difficult to further increase a high efficiency level--simply because of the narrower reserves.

A new aspect of regulation within the 9 percent limit is that the enterprises can use no more than 3 percent of the wage savings deriving from a reduction in personnel to increase the wage level, without a payment obligation. Thus, for example, if an enterprise reduces personnel by 5 percent and it does not reach the 9 percent even together with the wage increase possibilities deriving from the wage development index it can carry out a wage level increase corresponding to only 3 percent of the personnel decrease without making a payment. It can use the other 2 percent for this purpose only if it makes a payment. This rule is intended to see to it that enterprises capable of larger personnel reductions do not enjoy a significant advantage as compared to those which cannot reduce personnel but which do substantially increase the efficiency of their economic activity. It is our hypothesis that in general those enterprises will be capable of larger personnel reductions which are declining or which have very large internal reserves, that is, for the most part, those which are working with low efficiency. So it would not be correct if they enjoyed significant advantages.

The Fate of the Reserves

Another frequently voiced criticism of wage regulation was that regulation was built on a base principle. Among other things these limiting rules are suitable for moderating somewhat the negative factors deriving from the base principle. But the implementation of the base principle cannot be entirely eliminated from wage regulation at the price of eliminating every other interest in wage regulation together with the elimination of the increment interest accompanying the base principle.

In some areas of the people's economy the development of activity justifies an increase in personnel. In these areas the use of central wage level regulation or wage level regulation tied to performance is still justified. Beginning in 1980 these forms of wage regulation will be maintained only in a very narrow sphere.

We emphasized in the foregoing that in general wage increases will be made dependent on fulfilling requirements. But up to a certain limit the wage

level must be increased even if the wage development index does not increase and there is no way to reduce personnel. Material cover must be provided even in such enterprises so that the wages of good workers can be increased, but in such a way that these enterprises do not have the possibility of a general wage increase. So even those enterprises which have not acquired the right according to the general rules can carry out a wage level increase of no more than 2 percent. This 2 percent limit is not of the same nature as the 1.5 percent so-called guaranteed wage increase used up to the end of 1978. This concession, up to 2 percent, can be used only by those enterprises which could not increase wages at all or which could increase the wage level less than this from their own resources.

It is advantageous in wage management if the enterprise works out its wage policy conception thinking in terms of several years. For this reason it must be possible to regroup each year those assets which can be turned to wage payment. The wage reserve system, even before, made it possible to use in a following year a part of the wage development possibilities of good years. Beginning in 1980 the enterprises will be authorized to "advance" a part of the wage development possibilities of the year following the subject year, by fulfilling moderated payment obligations. This method can be used in the construction industry even in 1980.

In past years, because of the low payment threshold set at 6 percent, some enterprises saved significant wage sums. The modified regulation for 1980 makes it possible to use one percent from the sum saved thus far to increase the wage level each year. Insofar as the wage reserve provides cover for it the reserve must be reduced by twice as much over and above the sum used.

The new system for generating the shares fund is closely connected with the modified wage regulation. The tax on the shares fund will continue to be paid according to progressive keys on the basis of the ratio of shares to wages. But there is a change in the rule according to which the enterprise will receive a tax concession on the basis of the magnitude of the wage-plus-assets proportional profit up to the generation of a shares fund making up no more than 4 percent of wages. There is no tax concession or it will be more moderate for lower values of the cited profitability index but for higher values shares equal to 2 weeks can be generated tax free. This rule will increase interest in performance and will provide an advantage to enterprises working with high efficiency. These enterprises might be able to generate a certain shares fund without decreasing the sum that can be put into the developmental fund.

If it is properly applied the modified system of wage regulation will promote incentive to more efficient work, the rational regrouping of manpower and modernization of the product structure and will contribute to restoring the economic balance. But all this requires that the several elements of regulation work in the same direction. In addition much depends on the extent to which the enterprises perfect their internal interest systems and how consistently they realize differentiation according to performance in the wages paid to individuals and groups. The modified regulation is expected to better prompt the enterprises to replace egalitarianism with differentiated distribution adjusted to performance in their wage payment practices.

CONSUMER PRICE POLICY DISCUSSED

Budapest FIGYELO in Hungarian No 49, 5 Dec 79, pp 1, 4

[Article by Otto Lukacs: "Consumer and Trade Price Policy"]

[Text] Consumer prices are basically determined by the purchase cost (from the producer or from import), as well as by budgetary relationships. Budgetary relationships are manifested as deviations from the normative turnover tax in the form of preferences and deductions.

The question is whether maintaining preferences and withdrawals is right, and, if so, in what measure and where. It is easier to form an opinion on deductions. It is obvious that a higher than average turnover tax should be applied on articles harmful to health, such as alcoholic beverages and tobacco, and on purely luxury articles, such as furs and jewelry. However, unrestricted deviation from realistic value relationships are limited by the illegal processes enhanced by such deviations as "mug bars," smuggling, etc., which may be socially even more damaging than articles harmful to health. At the same time, a certain taxation of luxury articles is justified by the fact that most exceptionally high incomes are not proportional to the work by which they are earned.

Are preferences necessary?

The question of preferences is more complicated, as these already have a 30 year old tradition, which has made a dogma of the necessity of certain subsidies. In my opinion, preferences should and can be maintained in those areas where they benefit everyone, regardless of their wealth, as, for example, health and educational benefits. However, for articles that can be purchased in stores, the situation is different. It is obvious that individuals with higher incomes purchase more subsidized goods than those with more modest incomes--meat, children's clothing, etc. Thus, it often happens that the more someone earns--even if it is out of proportion to the work performed--the more government subsidies he gets. Gyula Lengyel, outstanding economist of the Soviet Republic [of Hungary in 1919] called our attention to this fact as early as 1919. Furthermore, foreigners visiting our country purchase considerable amounts of subsidized goods. An additional harmful effect of subsidies is that they encourage waste.

The economic management reform of 1968 made a freer and thus more rational formation of consumer prices possible as compared to the past. Similarly to producer's prices, consumer's prices can be classified in four different categories. Fixed and maximum prices are actually official prices; limited and free prices belong to the category of free "enterprise" prices. (The term free "enterprise" price is used here, as these free prices are not to be confused with market prices). Different regulations limit the variations of free enterprise prices: for instance, compulsory calculations, the decree on unfair profits, price controls, compulsory registration, etc.

The following table shows the variable of prices according to the different categories:

Retail price index at store level, per categories, in 1978 (1970=100); in parentheses, the distribution of retail turnover at store level by price categories in percentages.

	Price index	Fixed	Maximum	Limited	Free
Food store goods	124,4 (100)	127,2 (22)	122,1 (20)	124,2 (20)	148,1 (38)
Clothing goods	131,2 (100)	—	130,4 (1)	123,9 (71)	121,9 (28)
Miscellaneous industrialized goods	130,1 (100)	119,8 (10)	122,2 (47)	147,4 (10)	128,2 (33)
Total	128,2	121,1	122,9	147,2	138,9

At first sight, this table suggests that the increase of official prices has been slower than that of free prices. This picture changes drastically, however, if we take into account the price changes of 1979, when the official prices of tobacco and beer were changed at the beginning of the year, then on July 23 predominantly official prices on food articles were raised by an average of about 20%. It is public knowledge that even after the price increases, a considerable subsidy has remained on food articles. Thus, in the long run, fixed prices provide no guarantees against price increases.

Since the prices of some main goods categories increased comparably during a period of several years, they had no considerable lasting effect on the composition of the turnover. Otherwise, structural variations of the demand after the price increases occur mainly within the main categories of goods, by a displacement of the purchases—whenever possible—towards the lower priced products.

Lack of Cost Sensitivity

The price system that took shape after 1968 worked in a considerably more flexible way; it improved the supply of goods and promoted a better adjustment to demand. However, analyses have justly pointed out some shortcomings originating mainly from an expenditure (cost) price formation. Since the

producer and the distributor can sooner or later reclaim all their costs, they become insensitive to cost increases and are not forced to work efficiently. Finally, waste and the less than efficient use of live and embodied labor become manifest in the prices. Another problem of the price system is that officially controlled (determined) prices do not even allow the producer to pass on his justified costs, prompting him to turn to the well-known method of bartering. As a result, sometimes the consumer has to pay dearly for a marginal increase in user value.

These shortcomings are partly caused by the virtual lack of competition among vendors. A further problem is the fact that our prices—mainly those of raw materials and energy—have not followed foreign market prices. All this makes an improvement of the pricing system imperative. As we know, from January 1980, prices of energy resources, electrical power, as well as those of basic and semi-finished products, as determined by the president of OAAH (National Materials and Price Office), should take into account the long-term variations of foreign trade (import) prices. On the other hand, most of the prices practiced in the manufacturing industries will be adjusted to export prices. Thus, the producer will not be able to pass on his unjustified costs to the consumer, as the prices will be based on what he can get for his products on the world market.

However, it should be taken into account that not all enterprises can adapt themselves to the world market to the same degree and at the same speed. Therefore, certain deviations should be permitted in prices starting on January 1st, 1980; however, they should be eliminated by the companies during a four to five year period. These pricing principles cannot, however, be applied to the whole economy, including agriculture, construction, services, etc. But even in these areas price formation should be closely scrutinized and only costs characteristic to the best companies of the industry should be recognized as legitimate.

Too Many Guidelines

Regarding the future, the following basic principles have been adopted on consumer prices.

Consumer prices should:

- make clear, economic thinking possible and provide guidelines for rational action, encourage efficiency;
- stimulate the formation of a rational consumption patterns;
- provide bases for creating market balance and conveying market value judgment to the producers within the framework of the socialist planned economy along with the other means of market regulation;
- help promote a socialist way of life and a socialist conscience;

--complementing the means of basic importance in income policies, in harmony with its structure regulating role, have certain income regulating functions;

--cover costs in general and on the average and generate a net income.

Thus, the consumer price system can fulfill its task if prices (and price relations) are both economically and socially rational. However, it is doubtful whether these principles are clear enough and whether they do not contradict each other. It would probably be better to set fewer and clearer objectives, as this could provide better guidelines to price formation. For example, the requirement of balance of supply and demand should be met, as well as what was said above regarding subsidies and withdrawals.

On the basis of the preceding, the following question arises: What should be the price policy of the commerce? It is obvious that each article has its calculated price equal to the sum of the purchase price--including budgetary relationships--and the mark-up established on the basis of the commercial guideline profit margin between wholesale and retail prices. Where can and where should the commerce deviate from this price?

Of course, we can only talk about real price policy in the case of free prices. Two requirements must be set here: first, prices should assure the balance between supply and demand, but at the same time it should be required that commercial enterprises show no profit derived from higher prices. This can be achieved by returning the profit realized by the sale of an article to the population in the form of a lower price on another article. This is necessary, because if profits derived from higher prices are allowed, the companies would not strive to achieve higher profits by working more effectively and by providing better service to the population. These principles should be applied with the decree on unfair profits by considering unfair profits not on individual articles, but for the whole enterprise.

The right price policy has two more prerequisites that fall outside the price mechanism. Dr Zoltan Egyud addressed this problem in his article "Large Personnel--Small Profit" published in FIGYELO issue No 44 of 1979.

On one hand, enterprises must have an independent marketing policy, so that they are not forced to gear their price policies to moving stocks purchased under the influence of different expectations and unsalable at their original prices; on the other hand, real competition should enhance the stimulus conducive to greater effectiveness of competitive prices.

As we know, commercial enterprises are interested in a moderate increase of the purchase prices, which enables them to obtain a larger amount of profit with even unaltered profit margins. Real competition may restrict the companies' tendency to increase prices, and this is certainly a more reliable and simpler means of limiting unfair profits than legal dispositions.

HEAT LOSSES CAUSED BY POOR INSULATION

Warsaw SLOWO POWSZECHNE in Polish 19 Nov 79 p 3

[Article by Jan Fijor]

[Text] "Meeting the fuel and energy requirements is one of the basic conditions under which the socioeconomic development of the country can reach the goals set for the nineteen eighties." (From Guidelines to the Eighth Congress.)

In castles of the Teutonic Order six and seven centuries ago the heat losses due to radiation from the walls amounted to 6-7 kcal/m³ per hour. Those were solid 3m thick walls. In buildings constructed at the beginning of this century these losses became already 16 kcal/m³ per hour. After the war, but before the "large slab" had been introduced, the unit heat loss rose to 20 kcal, which prewar engineers would have regarded as wasteful. In today's buildings coming from house factories the unit heat loss has, because of poor technology and carelessness, been increased to 24 kcal or more!

Heat losses are better characterized by index "K" according to Polish Standards, namely the heat loss per hour from 1m² of building surface at 1°C temperature difference between inside and outside the building.

Consequential is not so much the definition as the basis of comparison. Thus in Poland this index, according to standards and specifications, must not exceed unity. In practice, however, it is found to be 1.2-1.4. In countries such as West Germany or France it is 0.5, and in Sweden with exceptionally stringent requirements it is 0.2-0.3. What does this mean? It means that heat losses in residential buildings (but not exclusively in such buildings) in Poland are 2.5-5 times higher than in other countries. A curiosity item: the "no good" office building in Warsaw at the corner of Chalubinskiego Street and Aleje Jerozolimskie has a heat loss index of 0.45 at the top floors!

Balance Sheet of Heat Losses

The amount of heat necessary for keeping a building warm certainly depends on the amount of heat lost through its walls, windows, roof, etc. However, we are only interested in the amount of heat which does not have to be lost at all.... Why do unjustifiable losses of heat occur?

The blame for this situation must be shared by the building ordinances and the carelessness with which they are implemented, mainly in terms of deviations from plans and applicable documents.

The technology most widely employed for prefabrication of outer walls is production of laminates. Between two layers of concrete is inserted a 6cm thick layer of thermal insulation. This layer is most often made of "mineral wool." Documents specify the exact distribution of this insulating material: uniform, without gaps. If such a wall were built according to specifications, the theoretical heat loss index would not exceed 0.5. However, a 30% "imperfection" has been allowed for so that $K=0.65$. As a result of carelessness and improper insertion of the insulating layer, it becomes flattened to a thickness of only 3cm and the insulation effect is thus reduced by 50%.

Another kind of wall is produced from light-weight ceramsite aggregates. The technology here is based on the premise that, depending on the size fraction, the weight of such an aggregate can vary from 500 to 700kg. Meanwhile, owing to deviations from specified technological procedures, the aggregate becomes heavier and its insulation effect decreases by one half.

The next cause of heat losses is an overzealous use of glass. The use of glass is now being restricted throughout the world. Only windows for utilitarian purposes are built. In this country the architect makes decisions. One must bear in mind that three times more heat is lost through windows than through outer and inner walls. There is no good reason for this prevalent generosity in the use of glass. In the Warsaw housing development Ursynow, for instance, there stand buildings with stairwells made almost 100% of glass. Adding to this the deficiencies in workmanship, resulting in leaks, we have a K index for the windows in this certainly modern housing development which may reach 8-9 (most optimistic estimates indicate 2.3-2.6).

How can one improve such a balance sheet? The basic obstacle to implementation of a program of housing insulation improvement (read: improvement of the country's energy balance sheet) is the lack of appropriate insulating materials. We now produce in Poland approximately 100 thousand tons of "mineral wool," while the estimated demand by 1985 is 800 thousand tons. On the other hand, the estimated investment cost of an increased capacity for producing enough to meet the needs of the building industry would be approximately 18 billion zlotys.

Efficiency in housing carpentry is much easier to attain at a lower cost. Here only 0.5 billion zlotys would be needed for investment. Modernization of the technology of producing honeycomb concrete of appropriate quality should also not cost much. The cost situation is similarly favorable in regard to improvements in the production of laminate walls.

What Do We Gain?

If the heat loss index were actually 0.65, as specified, if it were 0.3 rather than the 0.75 it is now for roofs and attics, if not only the glass surface of buildings were limited to 20% of the total but also double-strength window panes were made triple-strength and single-strength ones were made double-strength, then we would save 10-11 million tons of fuel during the next 10 years! I repeat, we are talking here only about the amount of housing construction planned for the two coming five-year-plan periods.

Savings resulting from improved thermal insulation in existing buildings would amount to over 20 million tons of fuel! This is approximately 30% of the fuel now used for heating.

On the positive side of the balance sheet must also appear 70 million zlotys of saved (or just not needed) investments in heat engineering projects, not to mention the saved cost of transportation involved with the production of so much heat.

For extracting 10 million tons of coal two rather large mines are needed. Add to this the cost of transporting this coal from a mine to the heating plant.

Last but not least is the advantage of so many fewer tons of sulfur oxides polluting the atmosphere.

How Much Would It Cost?

The investment cost of expanding the insulation materials industry would thus be 18 billion zlotys. Modernization of housing carpentry and technological improvements in the prefabrication of large slabs will cost, say, 2-3 billion zlotys. Let us add to this the cost of implementing a "modern insulation improvement program" in the building industry, of the same order of a few billion zlotys. The balance sheet of gains and losses is definitely biased in favor of gains. On the negative side of such a program, however, is the fact that these savings will be realized only in 8-10 years. Important remains nevertheless that these savings will be realized without the slightest doubt. They would be realized much sooner, if the insulation of already existing buildings were improved. Such an undertaking is, for the time being, still a very costly one.

Conclusion

When residential building construction was activated in Poland, during the first years of the nineteen seventies, it seemed that cement and a house factory would suffice. While tens of house factories were built at the high cost of billions of zlotys, not a single insulation materials factory was built.

It must be recognized that time is working against us. The later we implement such a program and an economical design, the more uneconomical buildings will rise and the more will the backlog grow. And improvement of existing buildings is, as has been pointed out earlier, more expensive.

The entire world, the East as much as the West, is updating its energy policy with more emphasis on the problems of building insulation. The few examples given here suggest that waste of thermal energy is a problem which must be eliminated as soon as possible. Especially since it is only a spurious problem.

2415

CSO: 2600

AGRICULTURAL WORKERS IN SOCIALIST TRANSFORMATION PROCESS NOTED

Warsaw PRZEGLAD ZWIAZKOWY in Polish No 10, Oct 79 pp 7-10

[Excerpts from the study by Wlodzimierz Dunn: "Agricultural Workers in the Process of Socialist Transformations"]

[Excerpts] Recently we celebrated the 60th anniversary of the founding of the Agricultural Workers' Trade Union (in 1919--Agricultural Workers), which took shape the morning after the recovery of sovereignty by the Polish state. It originated from the revolutionary current of the Polish left, from the experience gained in this country following the victory of the October Revolution, the worker and peasant councils, and, as a bearer of these traditions during the 20-year inter-war period, it had been active in direct confrontation with the class enemy in the countryside. The Agricultural Workers' Trade Union has also played a significant role in awakening class consciousness among the exploited masses of land-poor and landless peasants; the strikes organized by the Union on big estates gave rise to the peasant revolts of the 1920s and 1930s.

What role has been and is being played by this detachment of the working class in the socialist transformation of the countryside ever since Poland's rebirth as a state ruled by the working class? This question is tentatively answered by the study by Wlodzimierz Dunn, "Robotnicy Rolni w Procesie Socjalistycznych Przemian w Rolnictwie Polskim" [Agricultural Workers in the Process of Socialist Transformations in Polish Agriculture], from which extensive excerpts are reprinted below.

The Editors

The development of the agricultural detachment of the working class is closely related to the overall changes in the structure of the socialist society.

During 1946-1975 rural population diminished by about 0.8 million, and its share in the total population declined from 68.2 percent in 1964 to 44.3 percent in 1975. An even faster rate of decline was experienced by the numbers of the population mainly gainfully employed in agriculture (a decline of 2.5 million during the years 1950-1974), and its share in total population fell from 47.1 to 27.1 percent. In the same year 1974 about 30 percent of the population made its living from work in industry, construction, transport, and communications. On the other hand, owing to the land reform and the elimination of big landed estates, the numbers of the rural proletariat diminished drastically. Some 300,000 rural worker families received title to land, established their own farms, and thus entered the peasant class. A large proportion of these families migrated to the urban areas, thus increasing the numbers of the working class in industry and construction. In 1950 farm workers chiefly employed in state farms accounted for only 5.3 percent of the rural population compared with 11.9 percent in 1931 [sic].

However, the land reform in itself was a factor that did not recur again. The direction and pace of further changes were influenced by the development of productive forces in agriculture and the party and state policy toward the countryside and agriculture. The development of the agricultural detachment of the working class was initiated on the basis of the landed estates appropriated by the state from private owners.

In 1950 the PGR [State Farm] operated 1,828,000 hectares of arable land and already employed as many as 276,000 workers. During the Six Year Plan period they underwent further rapid expansion: by 1955 the lands under the jurisdiction of the Ministry of Agriculture as well as of the non-agricultural ministries aggregated 2,760,000 hectares, that is, 13.5 percent of the total arable land, and employed about 380,000 agricultural workers. That period also witnessed a vigorous growth in the number of workers associated with the mechanized service to agriculture. As early as in the late 1940s Cooperative Machine Centers (SOM) began to be set up, followed by the Rural Parish [Gmina] Machine Centers (GOM) intended to provide mechanized services to private farmers. And in 1949, in connection with the commencement of the collectivization of the Polish village, the State Machine Centers (POM), intended to provide assistance to the development of cooperatives and provide mechanized services to producer cooperatives, had been established. In 1950 their number reached 154; in 1956, 425. In 1956 they employed 53,200 persons, of whom 33,100 workers and 10,500 engineers and technicians. Although in 1956 the agricultural detachment of the working class consisted of about 420,000 workers, of whom 90 percent were directly employed in agricultural production.

This dynamic quantitative growth of the agricultural detachment of the working class has been, however, accompanied by certain negative occurrences.

In the process of the formation of the crews of state farms a negative selection has been taking place. The less enterprising individuals, with lower occupational and cultural ambitions, gravitated toward the PGR. In the first few years of existence of the PGR a worker shortage and a considerable turnover of personnel were a common phenomenon. Under these conditions, the consolidation of work teams and advancement of their skills progressed very slowly, which also diminished their prestige and thereby also constrained their role as precursors of socialist transformations in agriculture and in the consciousness of the rural population.

In the late 1950s the development of the socialized sector in agriculture had stalled; there arose tendencies toward shutting down the POMs and taking over their facilities for purposes unrelated to the mechanization of agriculture. There also had occurred a considerable and not always fully justified decline in the arable lands owned by the PGRs (by more than 12 percent). As a result, the agricultural detachment of the working class had decreased by about one-fourth, i.e. by more than 105,000 persons during late 1956 and early 1957.

It had, however, undergone a new and decisive--both quantitatively and qualitatively--expansion in the 1960s. By 1965 employment in state farms again increased by about 33,000 persons, and during 1966-1970, by an additional 29,200 persons, owing chiefly to the increase in the land area owned by the state farms. Employment in agricultural mechanization enterprises also began to increase. Here a tremendous role was played by the agricultural circles movement: it became necessary for the POMs to accept the responsibility for the repair and maintenance of the machinery and facilities belonging to these circles, and in 1961 the number of POM branches began to be expanded, from 150 in 1961 to 692 in 1970. As a result, in the POMs themselves alone employment had increased from 35,000 to 74,000 persons (of whom 53,000 workers).

As early as in the late 1950s there had also commenced the process of employing agricultural workers in agricultural circles and, in effect, of acquisition by these circles of increasing quantities of machinery and equipment, thanks to assistance by the Agricultural Development Fund that had been set up in 1959. In 1970 agricultural circles were already employing some 160,000 persons, including 71,000 tractor operators.

Altogether, in the early 1970s the number of workers employed in socialized agriculture (inclusive of agricultural circles and inter-circle machinery bases) had exceeded one-half of a million. At the same time, the structure of that detachment of the working class had changed: the proportion of workers employed in agricultural production units had decreased, while the proportion of workers employed in agricultural service enterprises had increased.

In the 1970s the socialized sector of agriculture was given the task of doubling the growth rate of its output compared with the private peasant economy and it was also assigned greater responsibility for the development of agriculture as a whole.

Owing to the incorporation by the socialized sector of large areas of land no longer used by peasants, the number of the workers employed in state farms increased by about 33,000 persons by 1975. An extremely rapid increase in the number of workers on the joint farms of the agricultural circles took place owing to the increase in their land areas from 105,000 hectares in 1970 to 255,000 hectares in 1975, as well as owing to the more rapid growth of their production, particularly animal production. The number of workers employed in service for the agricultural circles also increased--to 144,300 persons in 1975. In 1976 agricultural circles employed, among others, 83,300 tractor operators, 21,800 shop workers, 123,000 construction and repair service employees, etc. Altogether, the number of agricultural service workers increased from about 170,000 in 1970 to about 215,000 in 1975.

When allowance is also made for the number of permanent workers in agricultural producer cooperatives, it can be stated that in the present five-year plan period the share of the working class employed in agriculture has reached about 600,000 persons. This is a substantial proportion in the overall structure of the working class in Poland, equal to one-sixth of employment in industry and nearly three-fourths of employment in construction.

The structural changes expected to occur in agriculture in the next few years and the intensification of farm production on progressive peasant farms warrant postulating a further and substantial increase in the quantitative share of the agricultural detachment of the working class to more than 730,000 persons in 1980. Here, plans envisage a more rapid growth rate of employment of workers in agricultural production--from about 50 percent of total employment in the socialized sector in 1975 to about 60 percent in 1980.

The importance of this detachment of the working class hinges, however, not only on its numbers but also, at least to an equal degree, on occupational skills and general level of education and culture.

The temporary stagnation of the development of the socialized sector in agriculture that took place in late 1956 and early 1957 had also adversely affected the quality of personnel, but tendencies toward positive qualitative changes in the agricultural detachment of the working class took form already in the late 1950s and early 1960s, although they had been slower than the transformations in the structure itself of agriculture. During 1958-1964 the share of workers with higher-than-elementary education in the total number of workers in socialized agriculture rose from 2.4 to 4.2 percent, and the share of workers with elementary school education, from about 29 to 39 percent. Thus, workers lacking complete elementary school education

still continued to account for nearly 57 percent in agriculture. But by 1970 their numbers declined to 27.4 percent and already as many as 57.9 percent of workers had complete elementary school education, while an additional 12.3 percent had basic vocational training.

The marked advances in this field resulted chiefly from the improvements in the structure of personnel training in agricultural service enterprises, but in the PGR too there occurred an improvement in this respect owing to a considerable increase in mechanized equipment. The changes in production technology resulted in improved working conditions for agricultural workers, which was a major factor in stabilization of personnel and increase in their occupational aspirations. The changes in the structure of training were also influenced by the increased retirement of older workers who, as a rule, lacked elementary school education, and their replacement with graduates of basic vocational schools. In 1970 more than 6,400 PGR workers had secondary school or basic vocational background

It was only in the 1970s, however, that the changes in the academic background of PGR personnel became more pronounced, after the mechanization and automation of production processes were introduced on a broad scale. Unskilled manual labor has become nearly completely eliminated from most basic field work operations. Similar changes have taken place in animal husbandry: during 1971-1975 of the total of 770,000 new hog stalls in the PGR, 460,000 stalls were set up on 34 farms conducting animal husbandry by the industrial method. Now farms of this type can employ only workers with secondary or basic vocational education. The more rapid process of improvements in the educational structure of PGR workers has also been markedly influenced by gearing the classification rates in the new 1970 overall labor and wages schedule to the level of occupational skills. Owing to these factors the number of workers with occupational skills at the PGR has increased from 65,600 to 146,300 persons, during 1971-1976. During the same period the number of workers with basic vocational education has grown from 4,900 to 42,700, i.e. nearly ninefold, and the number of workers with secondary education, from 1,500 to 5,000, or more than threefold. During the same period also the share of workers with occupational skills at the TOR [Enterprises for Technical Services to Agriculture] has risen from 56 to 71 percent, and currently at these enterprises 4 percent of workers have secondary school education; 47 percent, basic vocational education, and 20 percent have taken skill advancement courses. It is worth noting that the TOR enterprises conduct on-the-job skill advancement training of their workers on a broad scale. In 1976 alone they trained about 44,500 operators of agricultural machinery, of whom more than 9,000 harvesting combine operators and more than 29,000 tractor operators, and in addition, at schools attached to their plants, they trained about 4,000 skilled workers and retrained nearly 11,400 shop workers and installers-assemblers as well as operators of agricultural equipment. These activities have resulted in a marked improvement in the occupational skills of other agricultural service units as well. Among other things, in 1978 42,200 workers employed in agricultural circles received skills training.

But despite such marked progress, the occupational skills of agricultural workers still remain at a much lower level compared with the skills of the workers in the non-agricultural sectors. According to the 1974 micro-census, agricultural production workers included only one-third as many persons with higher-than-elementary training, and every fourth worker did not complete elementary school. At the same time, the PGRs continue to hire personnel lacking elementary school education, as evidenced by the fact that in 1974 8.7 percent of agricultural workers up to 25 years old lacked the certificate of elementary school completion, whereas among non-agricultural workers this proportion is 2 percent.

Thus further improvements in the educational structure of personnel are to be expected, chiefly by employing graduates of agricultural and allied schools at all levels, but also along with provision of training courses. This is because the needs are tremendous. The PGRs themselves should employ by 1980 about 9,000 persons with higher education, 25,000 with secondary education, and about 30,000 with basic vocational training. The expected growth of the mechanization of agriculture requires, however--for the needs of the socialized sector alone--the annual retraining of about 20,000 mechanics-electricians, 3,000 electricians-installers, and 4,500 operators of agricultural machinery. In view, though, of the current inadequate level of personnel skills, on state farms alone it is planned to extend school courses to about 70,000 workers by 1980.

Along with the quantitative development of the agricultural detachment of the working class, changes in its demographic structure also are taking place. Between the second half of the 1950s and the second half of the 1960s there occurred a distinct decline in the number of young (up to 29 years) workers, but in the late 1960s and in the 1970s young people, quite often with vocational training, began to accept work on the PGRs. This undoubtedly happened owing to the growth of the prestige of the occupation of agricultural worker, improvements in his working conditions, and improvements in social and living conditions on PGR. The agricultural service enterprises, which introduce scientific and technical progress into the countryside and agriculture, have always attracted the best educated and most dynamic young people as employees. Thus, in general, for the entire socialized sector of agriculture, recent years have resulted in an increase in the share of younger employees (18-44 years old) in the total number of those occupationally active (from 68 percent in 1950 to 77 percent in 1974), while at the same time in the private sector of agriculture the share of the younger group declined from 55 percent in 1950 to 38 percent in 1974.

But despite the marked improvements, the qualitative structure of the agricultural detachment of the working class continues to be unsatisfactory, particularly in view of the hugeness of the tasks facing the socialized sector owing to the need to accelerate the process of the intensification of farm production. An increasingly greater area of land--that fundamental means of production in agriculture--is passing over to use by agricultural

workers and thus becoming the property of the entire nation. During 1960-1975 the aggregate area of arable land on state farms and the joint farm of agricultural circles already has grown from 2.5 to 3.5 million hectares, i.e. by 40 percent. Thus, agricultural workers participate in an increasing degree in providing the nation with foodstuffs: already in 1975 GPR production accounted for 21 of the marketable output of the entire agriculture.

The results of the performance of agricultural workers also affect greatly the production performance of peasant farms. Private agriculture would have been unable without the help of the socialized sector to introduce into agricultural production the achievements of scientific and technical progress in agriculture. Thus, e.g. the PGRs satisfy 90 percent of the demand of agriculture for high-grade sowing materials, and 30 to 90 percent of its demand for pedigreed livestock, depending on the kind of livestock.

In connection with the trends toward modernizing the production of the peasant sector, the tasks of the units providing services to agriculture will also continue to increase. The plans for 1980 anticipate that the SKR will provide the peasant sector with some 60 percent of the mineral fertilizers applied, about 80 percent of chemical crop-protecting operations, the harvesting of grain from 80 percent of the area, the harvesting of grasses and fodder crops and sugar beets from 60 percent of the area, etc.

In recent years inter-sector production cooperation has become one of the most effective forms of influencing the development of peasant farms. In 1976 agricultural circles conducted activities of this kind with 614 teams of private farmers as well as with nearly 95,000 peasant farms--chiefly as regards the development and improvement of animal husbandry. The working class in agriculture already plays and will continue to play an ever increasing role in the modernization and intensification of agricultural production and the provision of foodstuffs to the entire nation. It also plays an important role in restructuring the consciousness of the rural population. It was for this reason also that the Fourth Plenum of the PZPR [Polish United Workers Party] Central Committee paid special attention to the quality of that class and to the need to take every necessary measure so that capable and ambitious persons who are well trained for their tasks would undertake work in the socialized sector of agriculture, and so that the detachment of the working class would constitute an elite cadre.

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